COLONY OF MAURITIUS

ANNUAL REPORT

ON THE

AGRICULTURAL CONDITIONS OF THE COLONY

AND THE

WORK OF THE DEPARTMENT OF AGRICULTURE

FOR

1931

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SUGAR CANE RESEARCH STATION AND COLLEGE OF AGRICULTURE

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COLONY OF MAURITIUS

DEPARTMENT OF AGRICULTURE

ANNUAL REPORT FOR 1931

No. 1555/31.

THE HONOURABLE THE COLONIAL SECRETARY,

I have the honour to submit the report on the Agricultural Conditions of the Colony and the work of the Department of Agriculture for the year 1931.

PART I

GENERAL REPORT ON THE AGRICULTURAL CONDITIONS OF THE COLONY AND THE WORK OF THE DEPARTMENT OF AGRICULTURE FOR 1931

AGRICULTURAL CONDITIONS IN 1931

An exceptionally violent cyclone struck the Island on March the 5th and continued almost unabated for a period of three days doing exceptionally heavy damage to crops and property so that 1931 must be written down as a disastrous year for Mauritius agriculture as such a blow following on a period of record low prices for sugar left the Colony in a condition verging on financial ruin. A cyclone of such severity had not been experienced in Mauritius since 1892 and could not have occurred at a more unfortunate time. During the cyclone a maximum wind velocity of 89 miles per hour was recorded at the Central Experimental Station, Réduit, while the rainfall at the same station for the period 5th to 9th March amounted to 1125 mm.

Rainfall and temperature conditions during the year (Table I) indicate that the year was above average from the temperature stand-point and also above average from the rainfall stand-point during that period when canes normally make their most rapid growth but the long drought which followed the cyclone added considerably to the damage done by the wind.

TABLE I

Station—Department of Agriculture—Réduit

Month and Year	Air Temperature °C	Departure from normal °C	Rainfall m/m	Departure from normal %
1930				
November	21.5	− 0.1	66.5	+ 26
December	23.3	0.0	162.8	+ 19
1931				
January	24.4	+ 0.4	450.6	+ 70
February	24.3	+ 0.1	528.4	+ 91
March	24.1	+ 0.5	1,155.0	+ 250
April	23.3	+ 0.7	148.3	+ 34
May	20.8	+ 0.2	83.8	− 16
June	20.5	+ 1.9	60.1	− 32
July	19.0	+ 1.0	35.2	− 50
August	18.5	+ 0.6	42.0	− 21
September	19.5	+ 0.8	35.0	− 25
October	20.4	+ 0.6	20.8	− 59
November	22.2	+ 0.5	160.5	+ 214
December	23 7	+ 0.4	46.0	− 66

Estimates of the cyclone damage, made immediately after the storm, differed greatly and were variously put at 10 to 50% of the crop according to the district concerned. The preliminary compilation of the 1931 crop as prepared from factory returns now gives a total production of only 164½ thousand metric tons which compared with the average annual crop for the past six years shows a reduction of 63 thousand metric tons or approximately 28% on the six-year average of 227,300 tons. Actually the 1931 crop, as judged in the beginning of March before the cyclone was considerably above average and would probably have approximated to 245 thousand tons had it not been for the cyclone and its concomitant drought, so that the loss incurred by the sugar crop was most likely of the order of 80 thousand tons, or 33%, valued at 9½ million rupees net. Such a loss could not be borne by an industry which was already in dire straits without causing considerable financial

distress both to owners and workers and shortly after the cyclone an application was made to the Imperial Government for assistance to aid in making good the damage done and allow the Industry to carry on. As a result the Imperial Government guaranteed a loan, to be issued in London, in the name of the Colony, of a sum of £ 750,000 of which £ 500,000 was to be used for loans to private persons and companies to make good losses due to the cyclone, on the condition that such loans should be secured by a first lien on the properties concerned. The guarantee of this loan was a great relief to the sugar industry and has allowed planters to carry on for the time being but the general position is still extremely serious and very depressing and unless sugar prices improve in the near future, many concerns will be forced to close down as most companies are just carrying on and no more.

The production of sugar in 1931 in the various districts of the Island as compared with preceding six years' is shown in Table II beneath.

TABLE II

Yields in thousand metric tons

Districts	1931 preliminary compilation	1930	1929	1928	1927	1926	1925
Pamplemousses and Rivière du Rempart ...	42.9	43.00	54.68	59.55	52.72	44.15	51.86
Flacq	26.7	37.81	38.91	41.17	33.21	26.02	43.06
Moka	20.7	32.10	35.97	34.76	30.88	31.27	34.68
Plaines Wilhems	11.6	14.62	15.66	16.40	15 06	17.14	18.18
Black River	6.3	9.81	9.22	9.72	9.03	7.18½	8.66
Grand Port	29.6	37.09	36.41	41.41	35.88	35.13	39.72
Savanne	26.7	46.53	47.18	50.42	41.22	31.70	45.06
Total ...	164.5	220.96	238.03	253.43	218.00	192.59	241.22

The extraction of sugar per cent cane in 1931 was below the figure for last year being 10.58 as compared with 10.92 in 1930.

Grade of sugar manufacture.—The production of so called Raws (of approximately 98½° polarisation) was slightly above that of last year i.e. 83.1% as against 82.5% for 1930. The change that has come over the Industry in this respect during the past ten years, and especially since the change in the English tariff in 1928, is illustrated in the following table :—

TABLE III

Grades produced 1922–31

Year	Vesous	Raws	Lows
	%	%	%
1922 ...	97.20 ...	... ...	2.80
1923 ...	97.61 ...	... ...	2.39
1924 ...	98.34 ...	... ...	1.66
1925 ...	98.21 ...	... ...	1.79
1926 ...	98.10 ...	... ...	1.90
1927 ...	98.63 ...	... ...	1.37
1928 ...	71.80 ...	27.30 ...	0 90
1929 ...	23.90 ...	75.20 ...	0.90
1930 ...	16.80 ...	82.50 ...	0.70
1931 ...	16.20 ...	83.10 ...	0.70

Area under sugar cane.—At the end of 1930 the area under cane cultivation was estimated at 136,875 acres and there is no evidence to show that this figure altered to any extent during 1931. Estates with factories cultivated 50,444 acres and estates without factories 35,065 acres giving a total of 85,509 acres for estate cultivation. Small Indian Planters cultivated approximately 44,160 acres and Indian owned estates 10,100 acres giving a total of 54,260 acres or 39.7% of the total cane area of the Colony.

Disposal of the 1931 crop.—The bulk of the crop was shipped to the United Kingdom as in previous years, the Mauritius Sugar Syndicate handling approximately 82% of the crop. The sugar market for 1931 was the lowest on record for the past 50 years, the average net price received approximating to Rs. 5.90 per 50 kilos. The continuation of such low prices must mean the total collapse of the Sugar Industry in the Island.

Conditions affecting the Sugar Industry in 1931.—As mentioned in the last Annual Report of the Department, the Mauritius Sugar Industry was aided in 1930 by the remission of the chief export duties and by a loan from local funds of £ 1 for every ton of sugar produced. No such grant could be made in 1931, while in addition the export duty of 36 cents per 50 kilos (Ordinance 15 of 1929) was reimposed. The 30 cents per 50 kilos levied under Ordinance 2 of 1920 was not reimposed however.

Labour conditions.—The Population Census made in 1931 shows the number of agricultural labourers out of a total population of 393,238 in the Island to be 72,027 of whom 15,108 were females. Of the male workers 53,154 belonged to the Indian population and of the females 14,674, showing the preponderance of Indian Workers on the land. The majority of agricultural labourers are now paid by the day or by task. The rates of pay in 1931 were not appreciably lower than those of 1930 but there is a general tendency to decrease rates. Owing to the cutting of all costs on estates the number of unemployed persons is increasing, especially amongst the artisan class. In spite of this fact certain estates reported experiencing great difficulty in obtaining sufficient labour for cutting the crop even in districts where unemployment existed.

Machinery.—Sugar Machinery to the value of Rs. 399,124 only was imported during the year and tractor parts and ploughs to the value of Rs. 864. The last water-driven tandem mills in the Island were given up during the year and replaced by a steam driven plant.

Insect Pests.—Apart from the low prices ruling for sugar the most serious problem with which the sugar planters of the Island are faced to-day is the steady spread of Phytalus Smithi, our major cane pest, which, since its discovery in 1911, has steadily spread until to-day we find approximately 58 thousand acres of cane land infested out of a total of 137 thousand acres. The number of beetles captured during the 1930–31 season (July to June) was 324,440,016 an increase of 59 million on the previous year and the amount spent by the Department of Agriculture in purchasing beetles Rs. 66,252.00 as compared with Rs. 57,492.00 in 1929-30. This steady increase of Phytalus goes on yearly—the pest steadily spreading ahead of its parasites—so that to-day we see the prospect of the whole Island becoming infested at an early date unless more effective control measures can be applied.

The introduction and distribution by the Department of Agriculture of Tiphia parallela and Elis sp. has been largely responsible for the effective control now found on certain estates, nevertheless it is now obvious that these parasites are not as effective as was at first hoped and therefore other means of controlling the pest must be found. The failure of Tiphia and Elis to completely control the situation is probably due to (a) the large population of Phytalus already in existence in the Island before the introduction of the parasites (b) the non-synchronism in the life-cycle of the pest and the parasite i.e., when Tiphia are abundant there are few Phytalus larvae to parasitise and vice versa, (c) the probable existence of adverse meteorological factors which interfere with the larvae of the parasites.

As a result of the late Sir Francis Watts' recommendations, it was hoped that, with the co-operation of the Empire Marketing Board, the services of an eminent authority on biological control would be obtained to study and advise on the Phytalus situation in the Island. During the year however the Empire Marketing Board informed Government that they were no longer in a position to finance the scheme as previously arranged. The writer then approached the Sugar Industry Reserve Fund Committee who agreed to provide financial assistance provided that an authority approved by them could be obtained to undertake the work. Considerable difficulty was experienced in this connection however and at the time of writing no appointment had been made. The present proposals are (1) that an Entomologist should proceed to Madagascar with a view to introducing into Mauritius a Tiphia species known to exist there but never introduced into Mauritius for the reason that Tiphia parallela had already been introduced from Barbados and was thought to be more effective than it has actually proved to be, (2) that the biology of Phytalus or one of its near relatives should be thoroughly studied in its original home or in some country where its depredations are said to be controlled biologically, (3) that the possibility of introducing from Madagascar or the U.S.A. a parasitic diptera (Dexiidae) known to parasitise coleoptera larvae should be investigated. The Sugar Industry Reserve Fund Committee have very generously agreed to give financial assistance on a generous scale towards the carrying out of one or all of the above proposals.

As the result of recommendations put before the Phytalus Advisory Committee by the writer in May, it was decided that the collection and purchase of Phytalus larvae should be discontinued, as through the purchase of these larvae great hindrance was being given to the spread of Tiphia and Elis for the reason that it was impossible by casual examination to differentiate between parasitised and non-parasitised larvae so that large numbers of the former were being destroyed.

During an investigation undertaken in an attempt to determine the total annual loss to Mauritius on account of the Phytalus pest the writer was very much struck by the evidence of a gradually improving standard of cultivation on the estates of the Colony as shown by the fact that yields of cane per arpent on estates (as opposed to Small Indian Planters' lands) have not fallen on the average during the last twenty years in spite of the steady

spread of Phytalus and the acknowledged deterioration of the White Tanna Cane. This fact speaks very highly for the methods of cultivation developed on Mauritius Estates and indicates that without Phytalus we should have witnessed cane yields on estates increasing steadily during the last 20 years. When one comes to examine the figures for suchrose per cent cane however one finds a very different state of affairs, i.e., a gradual falling off in richness due, not to Phytalus damage, but to the deterioration of the chief cane variety, Big Tanna. This problem of falling suchrose content will be solved in the near future by the substitution of a new cane variety for the White Tanna, but the solution of the Phytalus problem is further off and will depend largely on the success of the new parasites about to be introduced by the Department of Agriculture in co-operation with the Sugar Industry Reserve Fund Committee. Again, the Sugarcane Research Station is investigating the possibility of producing a cane variety with a very robust rooting system which would be tolerant to Phytalus attack. It is by research work on the lines indicated that the Phytalus problem must be solved.

The report of the Assistant Entomologist which forms an annexure to this report gives details of other insect pests not dealt with here.

Plant diseases—A disease survey conducted at factory cane carriers was carried out by the Mycological Division in the same way as in 1927, 1928 and 1930. Such surveys, for various reasons, can only give approximate figures for the degree of incidence of cane diseases but they are nevertheless valuable as indicating the general trend of events and would expose any alarming increase of disease in any one area. Leaf Scald and Gumming continue to be the most serious cane diseases in the Island. The Gumming/Scald stem infection ratio on White Tanna, the most common variety, was determined during the survey as 5% : 9%. The variety P. O. J. 2878 is now showing itself to be only moderately susceptible to Leaf Scald although our first experiences with this variety indicated a high degree of susceptibility. The experiments conducted at St Aubin and Réduit to determine whether Leaf Scald could be eliminated in White Tanna areas by the selection of apparently disease-free planting material proved disappointing as it has been found that latent infection cannot be detected in cuttings. The experiments showed that this method did not result in a marked decrease in the incidence of Leaf Scald.

A beginning was made during the year to set up machinery for testing the degree of Gumming resistance in new cane seedlings using North's methods.

Red Rot still continues to cause much damage especially in fields of the variety D. K. 74 in the coastal regions of Grand Port and Savanne districts. The variety R.P. 6 is also especially liable to attack.

A serious outbreak of Black Shank disease on tobacco was recorded during the year and was controlled in the case of seedlings by the application of Cheshunt Compound to the seed beds. Mosaic disease on tobacco did little damage, chiefly owing to the control measures applied.

A serious outbreak of fruit-rot amongst pineapples was discovered in the Long Mountain district and is still under investigation. A base-rot of newly planted crowns and suckers was also reported on pineapples and did considerable damage.

A fuller report on the plant disease situation will be found in annexure No. II of this report.

Irrigation.—Four new irrigation experiments were laid down on Estates during the year, the experiments differing in layout from those previously laid down in that each block had two control plots, out of a total of five, on which the local straight line system of irrigation was conducted as opposed to the contour system used on the three test plots of each experiment.

Owing to cyclone damage the yields from last year's irrigation experiments are not recorded.

Work on the Midlands irrigation scheme for irrigating the North of the Island was discontinued in April owing to the financial situation.

La Ferme Reservoir, as on previous occasions, ceased to supply water during October and November thereby causing considerable loss.

Mauritius Hemp Industry.—This hardy crop was damaged by the cyclone to an extraordinary extent so that but little fibre was cut until towards the close of the year.

As a result of information received through the Mauritius Hemp Producers' Syndicate to the effect that Java Cantala fibre was driving Mauritius Hemp off the Belgian market owing to its superior qualities, a small consignment of Cantala suckers was imported during the year with a view to giving this crop a trial under Mauritius conditions. Java Cantala, although superior to Mauritius Hemp in quality is apparently inferior however to Java Sisal which is now said to be replacing Cantala in the Dutch East Indies according to Mr. E.F.S. Shepherd, of this Department, who visited Java during the year under review. It is almost certain that no fibre crop of the agave type other than Fourcroya, could exist locally under the wild conditions under which Mauritius Hemp (Fourcroya gigantea) is produced as it receives no form of cultivation and is moreover usually self-sown. It is estimated that there are over 17,000 acres of Fourcroya in the Island which is practically all self-sown and uncultivated but which nevertheless brings in a fair income in normal times and costs

nothing for upkeep at such times as the present when fibre production has practically ceased largely owing to the low prices ruling for fibre but partly owing to cyclone damage. The export of Mauritius Hemp in 1931 amounted to 455.3 tons (metric) only as compared with 1,464 tons in 1930 and 2,500 tons in 1929.

It is a peculiar fact that fibre crops such as Sisal etc., seem to have been more neglected by field experimenters in the tropics than any other crop. On discovering that there was a lack of accurate information locally regarding the habits, yield, growth-rate and longevity etc. of Mauritius Hemp a small field-trial was laid down at Réduit in August 1931 to test the two varieties of Mauritius Hemp (i.e. "Malgache" and "Créole") against two other fibres grown locally namely Sisal and Agave Mexicana (commonly called "Aloes Mozambique" in Mauritius). It was not possible to include Cantala in the experiment owing to lack of planting material. The experiment was laid down in August 1931 on an area of 40,080 sq. ft, each variety being distributed on triplicated plots each of which consisted of 2 double-rows spaced 3' x 3' with an alleyway of 9 ft. between each pair of double-rows.

As mentioned in the last Annual Report, Fourcroya fibre is now to be used locally for the manufacture of sugar bags. The factory, with machinery supplied by Messrs. Fairbairn Lawson Coombe and Barbour of Leeds, has now been set up at Quatre Bornes and should soon be in full operation.

Through the kind offer of the Imperial Institute, who are arranging for the trials, a consignment of Mauritius Hemp is being shipped to England for testing as to its suitability for marine cordage.

Tobacco.— Owing to unsettled conditions in the industry and also partly owing to the cyclone, the area grown under tobacco during the year showed a pronounced fall being only 1,783 acres as compared with 3,036 in 1930. Tobacco growers are anxiously awaiting the formation of the Government Tobacco Board and the opening of the Tobacco Warehouse, being confident that the above body will be able to control and stabilise the industry which in the past has been the victim of violent fluctuations. The Board will have power to limit the area grown each year and through the Tobacco Warehouse to purchase all local leaf which after conditioning will be sold to the local manufacturers who will only be able to purchase Mauritius leaf through the Warehouse. Half the profits of the Warehouse in any one year will go to a reserve fund while the other half will be divided amongst the growers according to the quantity and quality of leaf sold by them to the Board. It is hoped that an export trade will be built up later in the better grades of leaf.

During the year a new tobacco experimental station was established on an area of 12 arpents at La Ferme, Black River district, adjacent to the old experimental station at Mouna which is now to be handed back to its owner who had generously loaned the land to the Department. Apart from the ordinary variety trials and seed selection work it is proposed to carry out, over a period of years, a series of manurial experiments at this new station. Experimental work at Barkly Station will be discontinued and all tobacco work conducted at La Ferme.

The outbreak of Black Shank disease during the year caused considerable concern owing to its rapid spread which necessitated the passing of legislation to prevent the transfer of seed or plants from one plantation to another until a certificate had been obtained from this Department for the transfer. Twenty four cases of this disease were reported, sixteen of these occurring during the warm weather of April and May. The cold season crop would appear to be less affected by the disease. Mosaic disease, owing to the control measures taken, now appears to be well under control.

Annexure No. VIII of this report gives fuller details of the tobacco work of the Department.

Tea.—There was no increase in the area under tea in the island during the year, the production being 18,000 kilos as compared with 19,000 in 1930.

The Report on the Development of Tea Cultivation in Mauritius by Commander C. Goolden was received and published during the year. The salient points of this report can be summarised as follows :—

(i) That the "earthy flavour" usually found in Mauritius tea is due to bad methods of preparation and is not inherent.

(ii) That Mauritius tea is of the Up Country type.

(iii) That no serious diseases or pests of tea exist in the Island.

(iv) That there are approximately 100,000 acres of Crown or private lands situated in the uplands suited for tea cultivation.

(v) That the cost of opening up a 500 acre estate would be approximately Rs. 940 per acre, excluding management, and that the cost of production would be 50 to 60 cents of a rupee per lb. calculated on a yield of 500 lbs. per acre.

At present there is no indication of any immediate increase in the area under tea in the Colony.

Coconuts.—This crop was very seriously damaged by the hurricane, trees being stripped of fruit and leaves, if not uprooted. In this connection the writer was particularly struck by the behaviour of a sample of the Pemba Dwarf Coconut at Pamplemousses which not only stood up to the violence of the March cyclone but also retained its fruit. As a result a consignment of 500 nuts was ordered from Zanzibar for trial. These arrived in June and are to be established at Cannoniers Point. It is very desirable that a crop more profitable than Filao (Casuarina equisetifolium) and more wind resistant and quicker in maturing than the ordinary tall coconut should be found for establishing on the Pas Géométriques which surrounds the Island and the Dwarf Coconut might fill this role.

The Coconut Scale Insect (Aspidiotus destructor) did less damage than in previous years and is now controlled by its parasites and predators in those areas where the infestation is of long standing.

The export of copra and coconut oil during the year was 2,069 tons and 3,471 litres respectively.

Tung Oil.—A small experimental area of Aleurites Fordii was laid down at Réduit in January 1931, seventy trees being planted at 25′ × 25′. This plantation which has been interplanted with agaves is now well established.

Food Crops.—With a view to discovering the type of rice best suited for growing by small planters in Mauritius, seed of sixteen rice varieties was introduced by the Department of Agriculture during 1931 for preliminary trial. Particular efforts were made to obtain varieties from oceanic climates as it was thought that varieties evolved in continental countries would be less adaptable to local conditions. The following list shows the varieties introduced and their origin :—

	Variety	Origin
1	Bukit Tasin	Federated Malay States
2	Radin No. 2	,,
3	Radin No. 4	,,
4	Radin No. 27	,,
5	Seraun Kechil	,,
6	Sonacalif	Fiji
7	Motka	Fiji
8	Sudu Hinati	Ceylon
9	Goda-el	,,
10	Sudu Hinati	,,
11	Karappu Hinati	,,
12	Sudu Mawi	,,
13	Kalu Hinati	,,
14	Kalu Mawi	,,
15	White La Roi Man	Burmah
16	La Roi Man	,,

In addition the Department conducted at Réduit and Barkly Experiment Stations four Date of Planting and four Spacing Experiments to test the optimum date of planting and the best spacing distance to allow between rows, using the local creole hill rice as the test crop. These experiments unfortunately were ruined by the cyclone of March 1931 so that the results obtained are not recorded here. The experiments will be continued in 1932.

It is estimated that approximately 300 acres of hill rice were grown during the year, a comparatively small area, nevertheless ten times the area planted in 1929. The yields were very disappointing chiefly owing to the hurricane of March but also due in part to bad methods of cultivation and incorrect planting dates. As a result of last season's field results it is being found extremely difficult to persuade small holders to establish rice plantations on their spare land, particularly as imported rice can now be purchased at approximately 8 cents per lb. It is extremely important that the small Indian Planter of Mauritius should produce food on those lands not suited or needed for sugar production but the choice of food crops is difficult as the staple food of the people, rice, has not shown any signs of being a success here while other crops such as maize, manioc, and sweet potatoes are not generally liked by rice eating Indians.

The rice mill which was opened in Port Louis in 1930 has been turning out a good sample of rice but is hampered by lack of raw material to work upon.

The food settlements of the St. Martin Co-Operative Credit Society in the Black River district showed signs of better cultivation during the year. These settlements cover an area of approximately 83 acres, each plot being of one acre for which a rent of R. 1.00 per annum is paid to Government. The areas were visited regularly by officers of the Department and advice given to the cultivators. A particularly effective demonstration of the benefit of potato spraying was carried out.

The Department have established, at the various experiment stations, demonstration plots and yield trials of manioc, groundnuts, pigeon peas, sweet potatoes, maize, yams, green manures, etc. seeds or cuttings of which are available for distribution.

Fruit Canning and Preserving.—The factory of the Mauritius Pineapple Co. Ltd, Port Louis, mentioned in my last annual report, was opened during the year but was handicapped by lack of raw material. The area under pineapples was estimated at 150 acres only the production being 27,370 cans totalling 12,411 Kilos.

Owing to the generosity of the Empire Marketing Board a consignment of 300,000 plants and crowns of the Smooth Cayenne variety was introduced from Hawaii during October, the Board undertaking to contribute half the cost of the consignment up to a limit of £ 1250. This importation has allowed a fair sized area of the best canning variety to be laid down and will form the nucleus for future expansion. Several unsuccessful attempts had previously been made to introduce suitable planting material of the same variety from Réunion and Ceylon.

The canning factory at Bel Air extended its activities during the year producing some dozens of different canned goods and preserves several of which deserve to be better known on the English markets.

A comprehensive consignment of Mauritius canned goods, preserves and honey was sent to the British Industries Fair by the Department of Agriculture for exhibition.

Alcohol.—The number of litres distilled in 1930–31 was 618,172 as compared with 908,241 in 1929–30. The quantity issued for human consumption amounted to 522,181 litres while 178,460 litres were issued for industrial purposes. 21,085 litres of rum were exported.

Vanilla.—This industry is now almost dead, the production for the year amounting to a few kilos only—the product of one manufacturer. In 1886, the export of vanilla from Mauritius amounted to 22,792 kilos valued at Rs. 312,049 but the industry has been killed, as elsewhere, by the general use of cheap "Vanilline", instead of vanilla, for flavouring purposes.

LIVESTOCK

Cattle.—The number of bullocks imported for slaughter during the year was 4,574 of a c.i.f. value of Rs. 299,651.

During the year a cattle dipping tank was completed at Quay C., Port Louis Harbour, where imported cattle can be dipped immediately after landing.

Regulations were drafted by this Department and sanctioned by Government during the year to provide for the proper handling of cattle in Rodrigues, where it was reported that cattle suffered considerable hardship when being shipped.

Government Dairy.—119,923 litres of milk were produced during the year, an increase of 25,053 litres on 1930. This milk was sold to Government Hospitals and to the general public at 25 cents of a rupee per litre. The average number of animals at the Dairy during the year was 91 (see annexure No. VII).

Research.—As stated in last year's report the amount of research work that can be carried out by officers of the Department engaged on routine and teaching duties is limited. Accounts of the various investigations undertaken during the year are given in the different annexures to this report.

Sugarcane Research Station.—The Sugarcane Research Station made satisfactory progress during the year although handicapped by the absence of the Physiological Botanist who has not yet assumed duty. The search for a new cane variety to replace the old existing ones is being energetically pursued. From the seedlings raised in 1930, some 17,000 were planted out in one-hole trials, and part of these have now undergone the first selection process. During the crossing season of 1931, approximately 72,000 seedlings were raised a total of 22,000 seedlings having been planted out in the field. In addition many thousands of seedlings in boxes were distributed to estates for planting out and these, when mature, will be selected by an officer of this Station.

Eleven new type Variety Yield Trials were started during 1930 using the best of some 300 seedlings handed over to the Station on its formation. Nine of these trials were reaped in the crop season of 1931. As all the results obtained are from virgin canes, no definite recommendations can yet be made, but the following varieties have shown decided promise in these first trials :—

M 2316, M 2716, M 1318, M 723, M 1426 and BH 10/12. Approximately 22,000 cuttings of new varieties were released for distribution to Planters through the Senior Agricultural Officer.

Three of the manurial trials started in 1930, designed to test the optimum quantity of artificial nitrogenous fertiliser to be applied to virgin canes, were unfortunately so badly damaged by the cyclone as to render the results valueless. Six of these experiments were reaped including one to test the combined effect of nitrogen and potash applied as nitrate of potash. In all these experiments no significant increase in yield was observed from the application of nitrogen but it must be pointed out that the year was an exceptional one owing to the cyclone and the heavy precipitation which accompanied it. The experiments are being continued as well as a similar series to test the optimum quantities of potash and phosphoric acid fertilizers to apply to virgin and ratoon canes.

A general soil survey of the Island has been started, the majority of soils sampled being situated in the Savanne, Plaines Wilhems and Moka districts. Three types of soil have up to the present been recognised as (i) soils with a low clay and high sand content in which the molecular SiO_2/Al_2O_3 ratio is high (2.00), (ii) soils with a large clay content (60–80%) and (iii) soils with a low clay and high sand content in which the molecular SiO_2/Al_2O_3 ratio is very low (0.5). The combined moisture in these soils shows a very good correlation with the molecular SiO_2/Al_2O_3 ratio, and the pH value with the state of saturation of the base exchange complex in the soil.

It is suggested that by a determination of the clay content the combined water and the pH value, a very fair idea of the general soil properties may be obtained.

During the year the annual contribution from the Empire Marketing Board towards the cost of the Station was reduced from Rs. 26,667 to Rs. 22,204 per annum owing to the changed financial position of the Board.

The work of the Sugarcane Research Station is reviewed fully in a separate annual report.

AGRICULTURAL EDUCATION

Mauritius College of Agriculture.—The work of this institution was maintained on the same general lines as last year and is reviewed in a separate annual report. Eight students attended the College during the year two of these being extern students. The last Annual Laureateship under the old regulations was awarded during the year to Mr. J. Cochemé. Under the new regulations Student Scholarships will be awarded to outstanding students only as circumstances and funds dictate.

Farm School.—Sixteen pupils attended the school during the year. As a result of a very much more strict selection of pupils the 1st year class (8) attending this year were very much more promising than those of previous years. Apart from 10 hours class work per week each pupil carried out 2 hours carpentry, 2 hours smith-work and 24 hours manual work in the field. Considerably more practical work was given and each pupil allotted a plot of land on which to conduct a 4 year rotation of crops by his own manual efforts. In addition the students cultivated a flower and vegetable garden working communally.

As a measure of economy the Government decided to temporarily close the School as from the end of 1931. The School had been in existence for 4 years.

School Gardens.—Six new school gardens were registered during the year making a total of thirty two. These gardens were visited regularly by officers of the Department who gave technical advice to the masters in charge. The Senior Agricultural Officer reports a great improvement in the standard of these gardens of late. Particular attention is being given to the raising of food crops.

CO-OPERATIVE CREDIT SOCIETIES

The total number of Societies in operation in the Island on 31st December 1931 was 28 with a total membership of 2,307, the total share capital originally contributed being Rs. 77,483. Advances amounting to Rs. 2,000 were made by Government to Societies during the year, and advances totalling Rs. 1,520 repaid to Government by Societies. The total amount of advances still due to Government by Societies on 31st December was Rs. 4,780.

The work of these Societies forms the subject of a special annual report issued in September.

RODRIGUEZ

Agricultural conditions in this Island during the first six months of the year were satisfactory but the late crop of maize, the staple food of the people, was a poor one as the result of a drought which occurred in October-December. As a result a serious food shortage is feared early in 1932.

Through the courtesy of His Excellency, the Commander-in-Chief, East Indies Station, the Acting Director of Agriculture was enabled to visit the dependency in July on board H.M.S. "Effingham". As a result of this visit further efforts are now being made to improve the primitive agricultural methods of the islanders by the establishment of demonstration plots and school gardens. These demonstration plots are being laid down in places remote from the Agricultural Station and are to be worked partly by trained labourers from the Department. It is intended to retain each plot for one or two seasons only before moving to new areas, in this way covering the various districts of the island and leaving behind on each plot a certain area under permanent crops such as coffee, fruit trees, etc.

The school gardens are to be established at three primary schools and after the initial work of clearing they will be worked by the children themselves. It is proposed that the Agricultural Superintendent should give one lecture per month on agriculture at each school.

Owing to the fact that there has been no communication with Rodriguez for some time past, it has not been possible to include the annual report of the Agricultural Superintendent amongst the annexures to this report.

Réduit,
1st February 1931.

A. GLENDON HILL,
Senior Geneticist & Ag. Director of Agriculture.

PART II

DIVISIONAL REPORTS

I

ENTOMOLOGICAL DIVISION

The Assistant Entomologist proceeded to Europe on sick leave in January 1931, returning on December 1st. During that period the Scientific Assistant, Mr. J. Vinson, acted as Assistant Entomologist in charge of the Division and as Lecturer in Entomology and Zoology at the College of Agriculture.

Through a grant of £100 from the "Sugar Industry Reserve Fund Committee," Mr. A. Moutia. the Assistant Entomologist, was enabled to spend some time, whilst on leave, at Farnham Royal Laboratory, England, and in various other entomological laboratories in Europe studying problems connected with the biological control of insect pests. A report on this study was submitted to the "Sugar Industry Reserve Fund Committee" together with several new suggestions concerning steps to be taken for the more effective control of Phytalus Smithi in Mauritius.

Insect Pests

Phytalus Smithi (Arrow)

This insect is steadily increasing in numbers throughout the Island and new centres of infection discovered yearly. Vigorous efforts are being made to fight the pest. Hand collections of adult beetles at night coupled with the systematic liberation of parasites in newly infested centres, and in places where the parasites are rare, remain for the present the most adequate means of control known.

As the result of a proposal made by the Acting Director of Agriculture to the Phytalus Advisory Committee, the purchase and therefore the collection of Phytalus larvae was discontinued in 1931 for the reason that considerable numbers of parasites were being destroyed.

Though the parasite *Tiphia parallela*, Smith is fairly abundant in most infested centres, yet the spread of Phytalus is steadily increasing in all centres and it appears that the life-cycle of Tiphia in Mauritius is a very slow one, and that no great hope can be entertained that Tiphia alone will act as a complete check on Phytalus. It follows therefore that other means of control must be sought to cope successfully with the development of Phytalus.

324,400,000 beetles were destroyed in 1931 as against 265,000,000 for last year, and he cost of purchasing beetles Rs. 66,251.00 as against Rs. 57,492.00 last year. The annual report on the 1930–31 campaign has been submitted by the Chief Phytalus Officer in charge of the campaign (separate report).

Other Insect Pests

Sugar Cane Borers

Several cane plantations suffered severely this year through the attack of the Pink and the Spotted Borers. *Sesamia Vuteria*, Stoll and *Diatraea Venosata*, Wlk. The latter was especially active this year in some localities of the Island. General measures of control were recommended to planters and, on some Estates the systematic breeding and liberation of parasites carried out with success. As regards susceptibility of varieties the following were found to be the most susceptible to the attack of the Spotted Borer, viz :—D.K. 74, D. 109, D. 130, M. 55, M. 131 and M. 522. It is proposed to study the degree of parasitism amongst the different borers and the other ecological factors that might influence the development of these pests.

Coconut Scale Insect (*Aspidiotus destructor*, Sign).

This insect is at present kept under control by its parasites and its predators in places where the infestation is of old standing. Parasitism by the micro-chalcids was at a certain time of the year very high and predators were common in most of the infested centres.

The liberation of parasites and predators was systematically performed in newly infested centres. It is worth recording that the cyclone of March completely swept this pest from certain areas in the Island. The incidence of the parasites was as in precedin years determined in various places.

Cutworms

An invasion of caterpillars was noticed in April, May and June, after the cyclone which ravaged the Island in March. The cutworms *Prodenia litura*, F. and *Spodoptera mauritia*, Bdv. were specially troublesome in vegetable and tobacco plantations. Treatment with Paris Green and hand collection proved successful.

Papilio demodocus Esp.

This common insect pest of citrus trees developed this year in an abnormal manner so as to become a serious menace. This invasion may be put down to the destruction of the natural enemies of the caterpillar by the cyclone and also to the meteorological conditions which were favourable to its development.

MISCELLANEOUS INSECT PESTS

As in the preceding years various insect pests were reported as doing damage to several crops and plants. The most important ones are given in the table below together with the measures of control to check them.

Name of Insect	Crops attacked	Months	Localities	Remedies recommended and remarks
Gryllotalpa africana Pal. de B. (Mole cricket)	Tobacco ...	February	Flacq ...	Poison bait with Paris Green.
Luperodes quaternus, Fairm.	Beans ...	March ...	Réduit ...	Spraying with Lead Arsenate.
Solenopsis geminata, Fabr. (Red ant)	Tobacco seeds and seedlings	February, March, June and July	Mouna, Beau-Bassin, Vacoas	Petrol-Creoline Emulsion. Also Cyanogas.
Cosmopolites sordidus, Germ. (Banana weevil)	Banana ...	April ...	Chamouny ...	Sanitation, Trapping.
Porpe bjerkandrella, Thunb.	Artichoke ...	April ...	Réduit ...	Spraying with Lead Arsenate.
Agrotis ypsilon, Rott (cutworm)	Vegetables ...	April ...	Vacoas and Curepipe	Poison bait using Paris Green.
Adoretus Versutus, Har.	Rose trees ...	April ...	Vacoas	Spraying with Lead Arsenate.
Prodenia litura, Fab. and Spodoptera Mauritia, Bdv. (cutworms)	Vegetables...	May and June	General outbreak but chiefly Vallée des Prêtres and Montagne Longue	Poison bait. Hand picking. These pests are normally kept in check by natural control.
Agromyza phaseoli, Coq. (Bean fly)	Bean ...	July ...	Beau Bassin ...	(i) Destruction of severely injured plants. (ii) Hilling up the soil around the plants. (iii) Use of Creoline emulsion as repellent. (iv) The pupae of this fly were found to be parasitised by a Braconid, Opius liogaster, Szepl.
Papilio demodocus, Esp. (Orange butterfly)	Citrus trees	May, June, July to December	Moka, Rose Hill and Vacoas	Spraying with Lead Arsenate at 10 grms. per gallon of water
Aphis tavaresi, Del. Guerc.	Citrus trees	June ...	Réduit ...	Spraying with tobacco decoction
Catopsilia grandidieri, Mab.	Cassia florida	May ...	Beau Bassin ...	Hand picking of larvae, spraying with Paris Green.
Daphnis nerii, L.	,,	,,	,,	do
Etiella zinckenella, Tr.	Cajanus indicus	September	Réduit ...	Found attacking pods.
Maruca testulalis, Geyer	Cajanus indicus and bean	,,	,,	do
Polyommatus boeticus, L.	Cajanus indicus	,,	,,	Found attacking pods and flower buds
Pardasena virgulana, Mab.	,,	,,	,,	Larvae found pupating on the leaves, in a silken cocoon
Thrips sp.	,,	,,	,,	Found in flowers.
Cylas formicarius, Fabr.	Sweet potato	October ..	Montagne Longue	
Playtypus truncatus Chapuis, and Eccoptopterus sexpinosus, Mots.	Eugenia jambolona	,,	Moka ...	The adults bored freshly cut planks of Eugenia. Spraying with a 1% Creoline solution acted as repellent.

Name of Insect	Crops attacked	Months	Localities	Remedies recommended and remarks
Cirphis loreyi, Dup.	Sugar cane...	October November	Côte d'Or ...	Hand collecting. Larvae parasitised by an Ophion sp.
Serica sp. ...	,,	September	Bel Air ...	Destroyed 60 perches of young virgin canes.
Cratopus punctum, Fab.	,,	,,	,,	Larvae injured young canes.
Saissettia hemisphaerica, Targ.	Sechium edule	October ...	Port Louis ...	Treated by spraying with a Rosin Wash.
Crambus emmerezellus, Joan	Lawn	July ...	General ..	Nothing satisfactory known.

RESEARCH WORK

(a) *Phytalus Smithi*, Arrow *and its parasites* :—

As in preceding years a systematic survey was made in the various infested areas of the degree of parasitism of Phytalus by its parasites, viz: *Tiphia parallela*, Smith and *Elis thoracica*, Fabr. It can be seen from Table II hereunder that parasitism varied from a maximum of 44% to a minimum of 6% in the case of Tiphia, whilst for Elis the maximum was 11.8% and the minimum 0.3%.

TABLE II

PERCENTAGE OF PARASITISM IN PHYTALUS BY TIPHIA PARALLELA AND ELIS THORACICA

Locality	% Parasitism by Tiphia			% Parasitism by Elis			Mean Infection by Phytalus per acre in 1930
	Maximum	Minimum	Average	Maximum	Minimum	Average	
Pamplemousses ...	26.4	0.9	9.9	11.8	0.9	5.0	9,000
Moka and Plaines Wilhems...	44.0	3.8	23.0	6.7	0.3	0.4	19,000
Sébastopol	13.7	0.6	4.2	2.3	0.1	0.2	12,000
St. Julien	3.3	0.6	0.6	7.2	0.3	0.5	5,000
Savanne	15.5	1.5	5.3	nil	nil	nil	12,000

The degree of parasitism for the various localities are not comparable *inter se* because in some of these localities both the spread of the pest and the liberation of parasites are recent while in other localities both pest and parasites have existed for a long time. Pamplemousses, Moka and Savanne are old centres of infection as compared with Sébastopol and St. Julien. The incidence of parasites in the field and the ratio of their presence to the number of Phytalus larvae (see table below) has led to the conclusion, for this year, that the months of February, March and April are those when adult Tiphias are very scarce whilst Phytalus larvae are very abundant whereas in the months of June, July and August there is an abundance of Tiphia and a very limited supply of Phytalus larvae capable of being parasitised. This state of affairs may possibly explain the limited efficiency of Tiphia as a parasite of Phytalus.

TABLE III

RATIO OF PHYTALUS LARVAE AND ITS PARASITES DURING 1931

	Occurrence of Phytalus larvae			Occurrence of Parasites	
	Small %	Medium %	Full grown %	Tiphia	Elis
January	88.7	9.0	2.3	few	few
February	72.3	26.3	1.4	fairly numerous	few
March	33.0	48 0	19.0	few	few
April	14.3	36.2	49.5	few	fairly numerous
May	7.5	18.8	73 7	fairly numerous	do
June	0.0	19.2	80.8	numerous	do
July	0.2	6.0	93.8	do	do
August	0.0	1.1	98.9	do	few
September	0.0	0.0	100.0	do	few
October	0.0	0.0	100.0*	very scarce	very scarce
November	0.0	0.0	100.0*	do	do
December	20.9	0.5	78.6*	fairly numerous	do

*larvae mostly enclosed in cells for pupation.

Before being able to draw any conclusions from the non-synchronism of Phytalus with its parasite Tiphia parallela as seen this year the above observations must be repeated for at least one or two years more. A preliminary report on the above work by Mr. J. Vinson was submitted to the Phytalus Advisory Committee by the Acting Director of Agriculture on November 28th.

(b) *Breeding of Phytalus in manure.*—A first series of experiments was started regarding the possibility of Phytalus breeding in manure. 2,000 adult phytalus were placed in a manure heap in January 1931, only thirteen Phytalus larvæ being found in the manure five months later. The temperature of the manure at its maximum was above 40°C. A second series of experiments is now in hand using manure at different stages of decomposition.

(c) *The mongoose as an enemy of Phytalus.*—Owing to reports to the effect that mongooses were eating Phytalus, forty stomachs of mongoose were examined. Two only were found containing one phytalus larva each. This animal cannot be considered as a Phytalus destructor.

(d) *Scents as attractants for adult Phytalus.*—Various scents such as geraniol and eugenol, geranium oil and benzaldehyde were tried as baits for Phytalus—as is done in the case of the Japanese beetle. None of these substances was found effective.

(e) *Elis grandidieri*, Sauss. *from Rodrigues.*—The life-history of this Scoliid, a possible parasite of Phytalus Smithi, has been partly worked out. Its adaptation, under insectarium conditions, as natural enemy of Phytalus is more or less equal to that of Elis thoracica. Several importations of this parasite were made from Rodrigues during the year, 426 females and 73 males being liberated in various infested centres. Its beneficial action under nature conditions has not yet been proved as its introduction is too recent.

(f) *Insects attacking Cajanus indicus.*—The breeding of the different insect pests attacking Cajanus indicus has been carried out in the laboratory. Apart from the five species of Lycænidæ mentioned as a pest of this plant, the following insects were found to act as pests also, viz :—*Maruca testulalis* Geyer, *Etiella zinckenella*, Tr. and *Pardasena virgulana*, Mab. found attacking pods and flower buds.

Liberation of Beneficial Insects

Since its first liberation in 1928, the prickly pear insect *Dactylopius tomentosus*, Lam. has spread itself considerably and the insect is now very widely distributed over the Island. Large tracts of land are now free from prickly pear, and the dissemination of the insect has been continued this year in places not yet infested. If the liberation of Dactylopius tomentosus is continued systematically by all planters, it is expected that the whole Island will soon be free of prickly pear.

Miscellaneous activities of the Division

During the year the Division carried out the examination of imported and exported plants, the post mortem examination of small farm animals, the delivery of lectures in Zoology and Entomology to first and second year Students of the Agricultural College, the examination of sand from Réunion Island and of manure from Rodrigues. Mr. Vinson acted as examiner in Nature Teaching for the Monitor's Certificate and undertook the supervision and preparation of insect specimens for the Entomological section of the Mauritius Institute Museum. Periodic visits were paid to Estates when advice on the control of insect pests was sought.

ANDRÉ MOUTIA,
Assistant Entomologist.

II
BOTANICAL DIVISION

The Botanist and Mycologist returned on April 23rd from Australia and Java, to which countries he had been sent by Government to study the control methods practised there against the major cane diseases. Whilst in Java he also received instructions to investigate the Java Fibre Industry. The reports on these investigations have been already submitted.

From January to the above-mentioned date the work of the Division was carried out by the Plant Inspector, Mr. G. Orian, assisted by a junior officer of the Agricultural Division, in continuation of the arrangements made to carry on between the Mycologist's departure in October 1930 and the end of that year.

During the cane disease survey, conducted between the middle of September and the middle of November, the Division was assisted occasionally by the Chief Phytalus Officer and the junior officers of the Entomological and the Agricultural Divisions.

Except for a few weeks, Mr. J. Duhamel, Assistant Agricultural Instructor, who assisted the Plant Inspector during the absence of the Botanist and Mycologist, was provisionally attached to the staff of the Botanical Division.

In December the sanction of the Secretary of State for the Colonies was received for the appointment of Mr. G. Orian, Plant Inspector, to the post of Scientific Assistant, as recommended in Professor Ashby's report on his visit to Mauritius, dated 1930.

Sugar Cane Diseases

Leaf Scald (caused by *Bacterium albilineans* Ashby) and *Gumming* or *Gummosis* (caused by *Bacterium vascularum* (Cobb) G. Smith) continue to be the two most important cane diseases in the Island, the former chiefly because it is the disease causing most losses on White Tanna (the variety most widely cultivated) and R. P. 8 (a variety gaining in popularity), and the latter chiefly because its presence in the Island prevents the extended cultivation of certain high quality varieties. *Gumming* causes little *direct* crop loss in Mauritius because the varieties widely cultivated are highly resistant or tolerant to the disease.

During the year under review a cane disease survey was conducted at mill carriers with the valuable assistance of certain officers of the Entomological and the Agricultural Divisions. Similar surveys were carried out in 1927, 1928 and 1930 respectively. The results of this survey are shown in tabular form in Appendix II. Efforts were made to separate *Leaf Scald* infected from *Gumming* infected canes. The numbers listed under the heading, " not exuding gum," are taken to refer to *Leaf Scald* infections. It must be remembered, however, that a survey of this nature, can result in only approximate figures indicating the extent of spread of cane diseases, especially Scald, owing to (1) the small staff of inspectors, with the consequential difficulty of obtaining samples truly representative of the crop in the Island as a whole ;

(2) the probability that many canes exuding gum (and thus listed as gumming infected) are also scald infected ;

(3) the possibility of overlooking *very mild* cases of infection ;

(4) the difficulty of differentiating between scald and gumming in observed mild cases ;

(5) the fact that all canes *killed* by the disease are left in the field, and are, therefore, not taken into consideration in a survey of this kind conducted at the cane carrier.

As gumming is primarily a *leaf* disease, and only a certain percentage of infected shoots contract stem infection, the surveys do not at all reveal the extent of spread of this disease in the Island. Some indication is obtained, however, of the degree of tolerance of the varieties under cultivation.

The approximate nature of the results of the survey probably accounts (1) for the discrepancy, in some years, between the gumming/scald stem infection ratio indicated by field observation and that revealed by the survey, and (2) for the difference in total gumming and scald stem infections recorded from year to year, which differences are greater than field observations would indicate.

The gumming/scald stem infection ratio on White Tanna, as revealed by the survey in 1931 (5%: 9%), is, however, approximately in accord with that indicated by field observations, at any rate, more so than in past years.

The surveys, while they do not give *accurate* figures relating to the extent of spread of cane diseases in the Island, are, however, useful in that they would *expose* any alarming increase of a disease or diseases in the colony, and a considerable increase of intolerance to gumming, and that they indicate the estates with a percentage of diseased canes considerably higher than the average.

Before the return of the Botanist and Mycologist, the Plant Inspector carried out preliminary investigations on spread of gumming and scald by means of the cane cutting knife. The variety used was D.K. 74 on account of its natural resistance to the two diseases. The results of the experiments pointed to the conclusion that both diseases are readily spread by such means.

The Java seedling, P.O.J. 2878, which is now under cultivation in trial plots to the extent of about ten acres, shows only a moderate susceptibility to scald—less than was previously considered.

The local seedling, M. 522, was found infected with scald in one experimental plot. This is the first time that the disease has appeared on this seedling. Scald was also recorded for the first time on the varieties R.P. 6, D.K. 74 and Uba seedling.

Owing to certain difficulties experienced in the past in getting the causal organism of leaf scald into pure culture, certain modifications were introduced in the culture medium used, and in the method of preparation. Numerous attempts at isolation were conducted during the year to arrive at the most rapid method, and inoculations of cane shoots were effected in various ways with several organisms isolated from leaf scald infected tissue. Some difficulty is still being experienced in the isolation of this organism, which seems to grow with reluctance on artificial media, and in obtaining successful inoculations into cane tissue with pure cultures. The organism apparently loses its virulence rapidly in artificial culture.

The White Tanna plot at St. Aubin, which was laid out in 1929 with carefully selected, apparently disease-free planting material, to obtain information as to whether or not gumming and scald (particularly the latter) could be eliminated or reduced to a minimum on this variety by the establishment of such plots, was found to contain when mature a high percentage of diseased stools, especially scald infected. The conclusion has, therefore, been drawn that such a procedure does not tend to reduce the amount of scald, at any rate, on the White Tanna.

This is probably the result of a high percentage of latent infection in apparently healthy shoots, and also the rapidity of spread of the disease by secondary infection of healthy stools.

The work of establishing and enlarging such plots at Réduit was also abandoned owing to the high percentage of diseased stools (especially scald) which appeared in the selection plot laid out in 1929.

Observations were carried out on fields of the 55/1182 variety on some estates. Gumming was found widespread in these fields, including a fairly high percentage of *dead* shoots. In spite, however, of the losses experienced from gumming, the variety apparently gives yields high enough to warrant its continued cultivation. The planters interested have been advised to propagate this variety cautiously and not on too large a scale, and other and more resistant canes, such as B.H. 10/12 and locally raised seedlings, are being recommended for trial on their estates as a substitute for 55/1182.

Towards the end of the year a plot was laid out to test the resistance to gumming of locally raised and other cane varieties, especially a large number of seedlings obtained during the crossing season of 1931. The method employed is that of Mr. D.S. North, of the Colonial Sugar Refining Company, Australia.

Cuttings of a large number of varieties for planting in the variety collection plot of the Sugarcane Research Station were submitted to a rigorous inspection for the presence of gumming. All cuttings showing any traces of the disease, after being planted for about four weeks, dug up, cleaned and "sweated" (by placing them under moist bags for about one hour), were rejected. This variety collection plot is about 250 yards from the nearest cane field, and efforts are being made to plant only absolutely healthy cuttings in the attempt to keep the canes in this plot free, or as free as possible, from gumming and scald.

A leaf striping disease, which was formerly thought to be a stage of scald, is now considered to be the "*fourth disease*" discovered and thus temporarily named by Miss Dr. G. Wilbrink. Investigations on this disease are in progress. P.O.J. 2878 and White Tanna seem the most susceptible varieties.

Red Rot.—The position with regard to this disease was about the same as in previous years. It still causes marked losses, especially on D.K. 74, in plantations near the coast in Grand Port and Savanne. Other varieties on which the disease made its appearance are R.P. 6, D. 130, P.O.J. 213, White Tanna, M. 55, M.131, D. 109 and R.P.8.

D.K. 74 and R.P. 6 remain the most susceptible varieties.

Numerous cases of what appeared to be a severe root disease were reported and observed on the variety P.O.J. 213, which seems more sensitive to certain environmental conditions than other varieties.

A disease on R.P.8 canes at an estate in Plaines Wilhems was investigated. This disease was marked by a base rot of the stem, accompanied by a severe decay of the roots and, in many cases, reddened tissues at the nodes. No causal organism has yet been discovered.

Young cane seedlings in cases suffered from a root rot associated with Pythium sp. and Rhizoctonia sp. Experiments are in progress to test the pathogenicity of these organisms. Cheshunt compound was used to control the disease.

The jelly-like or mucilaginous excretion, or "stem-bleeding" disease, reported in previous years, was found not to be transmitted in infected cuttings.

The position with regard to other cane diseases is reported in tabular form in Appendix III, based on observations of the Plant Inspector.

DISEASES ON PLANTS OTHER THAN THE SUGAR CANE

Tobacco.—Mosaic disease was very seldom encountered. The "collar rot" now referred to as "black shank" was reported from several districts. It seems to cause most damage in the warmer months of the year. The Phytophthora found in association has been identified by Mr. S. F. Ashby as a strain of P. parasitica. No effective means of control in the field has yet been discovered.

Black Shank is the disease causing most losses in tobacco plantations. The organism also causes much damage in seed beds producing a kind of damping off. Application of Cheshunt compound seems to check the spread of the disease in seed beds.

Rhizoctonia sp. is also often found in association with damping off seedlings.

Nematodes (apparently Heterodera radicicola) caused slight losses in some districts.

Slight attacks of Granville Wilt (caused by Bacterium solanacearum E. F. S.) were reported from all the chief tobacco districts. The disease on the whole did not result in any appreciable loss. The same wilt was also found attacking egg plant (Solanum melongena), earth nuts (Arachis hypogea), and tomato (Lycopersicum esculentum).

Experiments were commenced to throw some light on the cause of decreased and delayed germination of tobacco seeds, which occurs sometimes after disinfection with Mercuric Chloride. The experiments will be continued.

Further information on tobacco diseases is given in the report of the Tobacco Officer.

Pineapples.—A dark brown to almost black dry rot of fruit (while still attached to the plant), resulting in the formation of hollowed areas and a bending of the fruit in most cases, was found widespread in the Montagne Longue area. This disease was noticed in previous years. Investigations on its etiology with a view to its control are in hand.

A severe base rot of pineapple suckers and crowns after planting was encountered in some plantations. Thielaviopsis paradoxa (Ceratostomella parodoxa) (De Seynes) Dade) was often found in association. This fungus was also found capable of producing a similar rot following artificial inoculation of suckers and crowns in the laboratory. The rot seems to cause appreciable losses only in cases when the suckers or crowns used were considerably weakened by having been kept too long before planting.

Cockscomb seedlings (*Celosia cristata*) were affected by a damping-off at the Farm School, Central Experiment Station, Réduit. Rhizoctonia sp. was found in association. Application of Cheshunt compound was recommended.

Potato (*Solanum tuberosum*).—Blight (Phytophthora infestans) was widespread as usual. Spraying experiments with Burgundy mixture were conducted at Bambous in co-operation with the Agricultural Division for the purpose of demonstration to growers. As in previous years the sprayed plots showed less infection.

Royal Palm (*Roystonea regia*). A few cases of bud rot were encountered.

Grape vines were attacked by a blight caused by Plasmopara viticola at Barkly Experiment Station. Experiments on its control by dusting are in hand.

Miscellaneous duties included:—

1. Supervision of quarantine greenhouses containing imported cane seedlings,
2. Supervision of inspection of imported and exported plants, including bulky consignments of pineapple suckers from Ceylon, Réunion and Hawaii.
3. Disinfection of imported seed, especially tobacco.

During the year a bulletin, "Diseases of Sugar Cane in Mauritius" (Revised Edition), by the Botanist and Mycologist, was published.

The Botanist and Mycologist, and, in his absence, the Plant Inspector, Mr. G. Orian, delivered four lectures and supervised two laboratory periods in Botany and Mycology per week at the College of Agriculture.

E. F. S. SHEPHERD,
Botanist and Mycologist.

III
CHEMICAL DIVISION

Staff.—(a) Mr. R. Lincoln, the Assistant Chemist, returned from European leave and resumed duty on October 22nd. (b) Mr. F. Berchon acted as head of Chemical Division during the absence of Mr. Lincoln and also as Lecturer in Chemistry at the Mauritius College of Agriculture. (c) Mr. J. Halais was appointed temporarily as Scientific Assistant to replace Mr. Berchon.

II.—Investigational Work

(a). *Liming Experiments*.—Carried on in continuation of the investigations started in June 1929 when an adequate dressing of lime (12 tons per acre) was applied to an acid soil (pH 5.6) at Réduit on each trial plot, there being five different varieties on each plot, i.e. White Tanna, Striped Tanna, R.P. 6., R.P.8., D.K. 74. The result of the experiment in 1931, analysed by the Statistician, may be summarised as follows:—

(i) The response of the R.P.6 to both forms of treatment (i.e. spread on surface v. dug in) was greater than that of the other varieties.

(ii) White Tanna and D.K.74 seemed more favourably affected by lime spread on.

(iii) Lime spread on surface gave better results on the whole than lime forked in.

(b). *Distillation tests on Camphor-yielding trees* (*Cinnamomum Camphorum*).—One hundred and eleven samples were distillated and, in all cases, with the exception of 17 trees, solid camphor was produced. The yield from the different trees does not vary greatly; when roughly separated the average yield of solid camphor obtained out of the 16 samples treated was 0.60%. The physical constants have not yet been determined, it is hoped to submit shortly a report thereon.

(c). *Butter analyses*.—The object of this investigation was to test the genuineness of imported butter which was reported to contain margarine. This accusation was not confirmed by analyses.

(d). *Tobacco Experiments*.—Six samples were analysed in connection with an investigation undertaken by the Tobacco Officer of this Department on the loss in weight of leaf tobacco during storage. The nicotine content calculated on dry matter in the leaf ranged from 1.50% to 2.27%. The ash, including sand and carbon dioxide, amounted to 12.17% and 17.08%. On the whole the ash contained less potassium oxide and more chlorine than shown in published figures.

(e). *Advisory Work*.—The advice of the Assistant Chemist was sought from time to time on questions relating to manures, soils, pastures, etc., and in certain cases, reports were submitted dealing with the various queries.

III.—Work done for other Government Departments

(*a*). A certain amount of work was done for the Government Railways on the calorific value and sulphur content of coal and the suitability of water for boiler purposes.

(*b*) As a result of suggestions put up by the Acting Director of Agriculture, a series of rum analyses and distillation experiments was begun with a view to discovering a method for detecting illicit rum. This work is being carried out in collaboration with the Police Department.

IV.—ROUTINE ANALYSES

The routine work of the Chemical Division was less during the year under review than the preceding years due to the smaller number of samples received.

	Samples received	Estimations
Guano melangé	9	42
Lime	15	15
Dipping	38	61
Phosphatic manures	3	3
Fumiers	10	20
Miscellaneous	25	53
Cane Juices	942	1,884
	1,042	2,078

In addition to the above and in connection with the investigational work mentioned above the following routine work was done.

	Number of Samples	Estimations
Camphor	111	131
Tobacco	8	64
Butter	2	16
Coal	3	12
Water	3	18
Soils	6	66
	133	307

V.—EDUCATION

The usual duties in relation to the teaching of chemistry at the Mauritius Agricultural College were performed by the Acting Assistant Chemist and by the Acting Scientific Assistant, Mr. J. Halais, during the absence of the Lecturer in Chemistry.

The duties consisted of the delivering of two lectures and the supervision of one laboratory period weekly to each class.

The Acting Assistant Chemist was appointed one of the four examiners for the Registration of Agricultural Chemists.

R. LINCOLN,
Assistant Chemist.

IV

SUGAR TECHNOLOGY DIVISION.

Visits to factories, investigations, &c.—During the crop, the Sugar Technologist visited twenty six sugar factories, many of them in company with the Assistant Sugar Technologist.

Investigations were carried out in certain factories on mill work and the curing of massecuites, which necessitated repeated visits.

The average percentage of sucrose in the cane and purity of the juice were lower than in 1930, probably as a consequence of the March cyclone. Crushing was difficult, the percentage of fibre high and the canes very short, which caused a reduction in the grinding capacity of tandems.

A double set of cane knives was installed in one factory together with a link belt cane carrier. The peculiarity of the installation consists in the fact that the first set of knives revolves in counterdirection to the cane carrier. The results obtained were very satisfactory and the grinding capacity of the tandem increased by several tons per hour.

Defecation of the juice was very easy, except for the last fortnight of the crop in localities where the canes were overripe ; a fall in the boiling house recovery coincided with it.

Sugar extracted % cane was lower than in 1930.

The proportion of raw sugar produced was about 84 % of the total. The quality and polarization of the sugar were satisfactory.

The only water-driven tandem set of mills existing in the Colony was replaced by steam engines in the year under review.

Controle Mutuel.—Thirty two factories contributed to the fortnightly controle mutuel. Final results for the crop are now being collected. It is expected to obtain figures from 38 to 40 factories out of a total of 42.

One Menage's automatic measuring tank for measuring the mixed juice was placed in a sugar factory, with accurate and satisfactory results.

Educational.—Complete courses of lectures were delivered by the Sugar Technologist and the Assistant Sugar Technologist to the students of the College of Agriculture in Sugar Cane Cultivation, Sugar House Chemistry, Sugar Technology, Mechanical Engineering, Building Construction and Surveying. Practical demonstrations and laboratory work followed the lectures. During the offseason the students were accompanied on visits to sugar factories where practical demonstrations were given.

Miscellaneous.—Articles were written for publication in the Revue Agricole.

The Sugar Technologist acted as Honorary Secretary to the Board of the Mauritius Institute during the year and as Secretary to the Sugar Industry Reserve Fund Committee.

L. BAISSAC,
Sugar Technologist.

V

STATISTICAL DIVISION

Agricultural Statistics.—The Blue Book section relating to Agriculture was prepared. Statistical data were supplied to the International Institute of Agriculture, Rome, to the Board of Trade, the Colonial Secretary's Office, the Immigration Department, etc., and to various interested bodies both here and abroad.

Quarterly reviews on the Cost of Living, Weather and Crop conditions were supplied to Government and the usual forecasts of crop production prepared.

The results of field experiments conducted by the Department in relation to variety and manure tests were subjected to the usual statistical analysis.

Agricultural Meteorology.—The Meteorological records of the Department were kept during the year. Observations of air temperature, evaporation, rainfall and autographic record of temperature, sunshine, wind direction and velocity were obtained at the Central Experiment Station, Réduit. Air temperature, evaporation and rainfall records obtained at Curepipe Botanical Gardens, Abercrombie Nursery and Barkly Experiment Stations were recorded in addition to the rainfall observations at the Royal Botanical Gardens, Pamplemousses. In addition, most sugar estates contribute rainfall observations. These data are reduced, tabulated and coordinated by this Division for use in crop forecasting and for questions connected with climatic factors. Summaries of results are published in Appendix I of the present report.

Educational.—The general management of the Agricultural College was carried on by me on the same lines as heretofore under the direction of the Principal and with the help of the College Clerk. Lectures in Physics and Applied Mathematics were delivered once a week to the First Year students and once a week to the Second Year students of the Agricultural College.

Special Work.—The Statistician acted as Census Commissioner for Mauritius and Dependencies, throughout the year.

M. KOENIG,
Statistician.

VI

VETERINARY DIVISION

Importation of Animals.—The following animals were imported after examination and their landing allowed :—

	From other countries	From Dependencies
Cows and Oxen ...	4,574	391
Horses ...	12	4
Donkeys ...	...	2
Pigs ...	70	2,205
Sheep ...	30	900
Goats ...	...	2,988
Dogs ...	5	...
Cat ...	1	...
Turtles ...	...	10

Quarantine.—Five dogs were quarantined during the year at the Government Kennels, Réduit. One cat was placed under 6 months' observation on its owner's premises.

CONTAGIOUS DISEASES

Surra.—7,826 animals were examined and 37 cases of surra detected, of which 2 were equines which were destroyed. Affected bovines were treated with "Arsenious acid" and "Atoxyl" and recovered subsequently. Six lots of the above drugs were delivered to owners for treating their own animals.

Tuberculosis.—131 bovines were tested with tuberculin. The test applied being the sub-cutaneous one.

Milch cattle : 120 tests, 5 positive reactions and 2 doubtful.
Draught cattle : 11 tests, 1 positive reaction and nil doubtful.

B. C. G. Vaccine.—The number of doses of vaccine delivered to breeders was 1,076 as compared with 991 in 1930. This prophylactic vaccine is highly appreciated by stock breeders. The results obtained with calves treated with this vaccine indicate that those so treated thrive very much better than non treated calves.

Epizootic Lymphangitis.—One case of this disease was recorded and the animal destroyed.

GOVERNMENT DAIRY

One cow was treated for inversion of uterus. One calf died of congestion of the lungs. One cow died of pericarditis and another of a rupture of the uterus through calving.

21 cases of abortion were recorded during the year as compared with 19 in 1930. With the assistance of the Bacteriological Laboratory a vaccine of the Besredka type was prepared and is being used with promising results. The "Bang Bacillus" together with "Vibrion" fœtus were carefully looked for with negative results.

DECLARATION OF DEATH

152 deaths amongst bovines were reported by the Police, most of these animals died of injuries received during the cyclone of March. In one case the owner has been prosecuted and fined for not having reported the death of his animal.

INSPECTION OF ABATTOIRS

Surprise visits were made to the various abattoirs of the Colony. Two carcases of bovines seized for tuberculosis were maintained together with one of a swine. Parts of carcases which had been slaughtered outside abattoirs were seized in three different meat shops, the butchers being subsequently prosecuted and fined.

The regulations governing the slaughter of under age animals were amended during the year thus allowing about 60 cows and heifers to be slaughtered for sterility, injuries or for humanitarian reasons.

CRUELTY TO ANIMALS

58 equines and bovines were examined for evidence of cruelty at the request of the Inspector General of Police, owners were prosecuted and fined in most of these cases. The post mortem examination of a dog suspected of having been poisoned was carried out and parts of the organs were removed for toxicological examination.

COLLEGE OF AGRICULTURE

Lectures were delivered once weekly to 1st Year Students on the Elementary Anatomy and the Physiology of Farm Animals. These lectures were regularly attended by Students.

GOVERNMENT ANIMALS

Government animals were attended to regularly and treated for the following : *Medical and Health Department* : 2 mules for lameness, one bullock for a fractured horn and one mule for injuries ; *Woods and Forests Department* : one bullock for colic, one treated for injuries and two donkeys for lameness ; *Poor Law Department* : one donkey treated for lameness.

F. E. LIONNET,
Government Veterinary Surgeon.

VII

GOVERNMENT DAIRY

Yield of Milk.—119,923 litres of milk were produced during 1931, showing an increase of 25,053 litres on the previous year. The milk was disposed of as follows :—

Supplied to Government Hospitals	...	76,631 litres.
Supplied to the Public ...	...	35,365 ,,
Fed to Calves ...	...	7,489 ,,
Samples for Control ...	...	438 ,,

This milk was sold at 25 cents per litre.

The yield of individual cows is given in annexed table.

Births.—54 births were recorded : 30 females and 24 males.

Deaths.—One aged cow died from pericarditis, one from metroperitonitis and one calf from congestion of the lungs.

Abortion.– Twenty one cases of abortion were recorded during the year as against nineteen last year. Eleven of these cases occurred before April, when vaccination against abortion was first started (see Report of Government Veterinary Surgeon above). Twenty five cows, which had calved normally, retained their afterbirth and fifty four cows were served unsuccessfully.

Sales.—Thirty two calves were sold to breeders and fourteen taken over by the Department of Agriculture. Four cows were sold as unfit for reproduction.

The average number of animals at the Dairy during the year was 91.

Y. LEFÉBURE,
Officer in charge Dairy.

GOVERNMENT DAIRY—CUREPIPE—RETURN OF MILK YIELD DURING THE YEAR 1931.

Months	Princess I	Bet II	Médine	Violet I	Charlotte II	Narcissus 2/2	Aster IV	Rose Belle	Rose II	Tulip III	Montagne Blanche I	Triolet	Mauricia	Daisy 2/1	Elsenburg	Pretoria I	Mahébourg
January ...	112	21	128	282	366	155	235	120	125	253	241	124	538	19	80	54	367
February ...	90	...	114	248	303	79	205	105	84	209	216	102	376	...	64	39	296
March ...	94	...	114	254	285	...	190	101	11	209	207	95	373	208	48	...	302
April ...	84	...	98	218	242	...	142	86	49	193	178	87	336	283	19	...	252
May ...	82	...	93	221	254	...	122	83	129	170	138	83	353	269	...	...	240
June ...	73	...	84	190	219	124	79	54	118	153	67	79	349	262	...	...	214
July ...	58	...	65	160	174	344	3	...	115	134	125	7	332	255	...	...	199
August ...	47	...	55	117	152	302	286	...	104	119	119	...	297	217	...	127	175
September ...	52	...	52	116	145	315	345	...	101	138	119	...	306	223	...	104	195
October ...	44	...	38	92	122	293	321	...	91	116	113	...	282	201	...	74	183
November ...	41	...	6	76	85	250	265	...	75	78	94	...	239	158	...	27	166
December ...	42	...	124	65	82	249	258	...	72	10	79	...	226	84	...	...	176
Total ...	819	21	971	2,039	2,428	2,111	2,451	549	1,074	1,782	1,696	577	4,007	2,179	211	425	2,765

GOVERNMENT DAIRY—CUREPIPE—RETURN OF MILK YIELD DURING THE YEAR 1931.

Months	St. Pierre	Elsa	Nora I	Thora	Bet III	Shamrock II	Pretoria IV	Violet 2/1	Pretoria III	Hilda	Daisy I	Montagne Blanche II	Larkspur	Narcissus 2/3	Vaillante	Replète
January ...	245	299	396	162	360	379	225	380	156	285	80	289	16	203	326	43
February ...	194	253	290	156	282	306	183	316	67	252	76	258	...	156	269	...
March ...	174	250	281	133	300	316	174	322	...	273	67	255	...	162	286	...
April ...	155	226	254	86	252	279	148	282	...	239	30	238	...	133	229	302
May ...	139	229	251	76	271	299	151	284	178	236	...	231	...	133	231	285
June ...	71	213	221	12	273	283	132	272	290	216	...	224	...	130	213	260
July ...	...	198	196	...	234	258	72	240	255	181	...	184	...	76	109	254
August ...	...	159	162	...	137	134	11	150	231	133	...	157	...	1	...	235
September...	...	167	160	...	142	42	209	80	223	124	...	142	...	...	25	235
October ...	...	158	85	...	...	...	197	51	192	108	...	76	...	135	373	235
November	183	121	8	...	...	...	175	275	166	87	...	7	...	266	346	194
December	345	94	197	...	...	233	176	342	163	100	...	...	...	254	315	171
Total ...	1,506	2,367	2,501	625	2,251	2,529	1,853	2,994	1,921	2,234	253	2,061	16	1,649	2,722	2,214

GOVERNMENT DAIRY—CUREPIPE—RETURN OF MILK YIELD DURING THE YEAR 1931

Months	Diligente	Laborieuse	Abondante	Neigeuse	Capricieuse	Mignonne	Favorite	Féconde	Gracieuse	Blanchette	Princess V	Jantji II	Flacq	Belliqueuse	Géranium III	Bianca II
January ...	157	347	447	125	93	316	6	149	138	420	173	218	8	155	...	...
February ...	123	333	364	105	73	267	...	76	115	397	194	242	258	120	160	366
March ...	80	355	378	103	27	279	...	26	106	383	178	246	267	105	226	375
April ...	41	335	331	92	...	235	...	...	86	337	161	223	262	79	216	339
May ...	...	296	318	95	...	230	200	...	82	328	174	217	268	45	222	342
June ...	...	272	303	83	...	217	350	...	79	326	168	191	249	...	204	322
July ...	283	253	267	84	...	170	334	...	63	321	159	79	204	...	186	308
August ...	309	215	173	74	220	145	277	...	2	305	120	...	191	...	170	235
September	303	213	67	78	367	127	268	...	...	340	125	...	169	...	168	93
October ...	287	208	...	74	331	109	260	...	...	334	104	...	31	...	141	...
November	249	182	226	62	285	89	220	...	100	295	35	253	...	...	107	...
December	241	171	386	67	271	83	214	...	227	272	...	330	...	130	97	127
Total ...	2,073	3,180	3,260	1,042	1,667	2,267	2,129	251	998	4,058	1,591	1,999	1,907	634	1,897	2,507

GOVERNMENT DAIRY—CUREPIPE—RETURN OF MILK YIELD DURING THE YEAR 1931

Months	Bet I	Géranium V	Daisy II	Prodigue	Aster III	Pretoria II	Princess II	Narcissus II	Follette	Bianca I	Doucette	Tulip IV	Charlotte III	Thistle IV	Daisy IV	Majestueuse	Nora III
January ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
February ...	49	83	252	107	77	...	...	...	...	...	...	...	...	...	...	...	...
March ...	111	243	312	259	323	107	121	67	110	351	125	...	...	...	...	...	...
April ...	141	186	265	223	287	256	134	31	114	417	234	162	63	38	58	...	...
May ...	156	224	247	234	269	258	139	...	126	447	237	229	89	92	130	170	51
June ...	154	217	224	230	224	219	133	...	132	397	218	213	71	85	125	246	215
July ...	137	210	186	217	172	178	137	...	127	365	211	201	55	63	95	237	219
August ...	124	191	146	200	134	151	101	10	121	304	197	183	49	64	85	216	225
September	124	203	156	176	130	133	95	226	119	311	183	178	59	69	84	220	227
October ...	127	196	141	173	90	101	85	212	105	323	173	169	54	79	80	208	217
November ...	112	159	101	136	4	38	65	165	85	295	143	138	49	72	47	176	184
December ...	110	170	59	75	...	...	61	156	85	208	113	146	49	76	91	158	185
Total ...	1,345	2,082	2,089	2,030	1,710	1,441	1,071	867	1,124	3,418	1,834	1,619	538	638	795	1,631	1,523

GOVERNMENT DAIRY—CUREPIPE—RETURN OF MILK YIELD DURING THE YEAR 1931

Months	Charlotte I	Violet II	Joyeuse	Pétulante	Charlotte VI	Malicieuse	Nocturne	Clara	Bruyante	Opulante	Nerveuse	Indolente	Elsenburg VI	Grand Total
January ...	...	...	...	...	...	...	...	...	...	...	...	...	...	9,816
February ...	...	...	...	...	...	...	...	...	...	...	...	...	...	9,348
March ...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,747
April ...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,467
May ...	...	...	...	...	...	...	...	...	...	...	...	...	...	11,146
June ...	...	..	...	...	...	...	...	...	...	...	...	...	...	10,742
July ...	5	33	...	...	...	...	...	...	...	...	...	...	...	9,787
August ...	150	137	170	81	...	...	...	...	...	...	...	...	...	9,102
September ...	185	148	358	270	95	25	...	...	...	...	...	...	...	9,852
October ..	172	159	345	247	200	109	152	24	...	...	...	...	...	9,400
November ...	148	135	311	199	181	89	358	100	188	13	...	...	...	9,182
December ...	128	124	299	201	171	81	314	87	246	248	89	98	33	10,334
Total ...	788	736	1,483	998	647	304	824	211	434	261	89	98	33	119,923

VIII

TOBACCO DIVISION

General Conditions.—The cyclone which passed over the Island during March caused extensive damage to tobacco plantations and seed beds. The majority of growers lost all the seedlings which were in the seed-beds and in consequence thereof planting of the first crop was delayed by 2 to 3 months and also considerably curtailed. The seed supply was insufficient to meet the demand and was partly responsible for a reduction in the acreage planted. The weather conditions during the remainder of the year were, on the whole, favourable, although certain districts suffered somewhat from drought which was aggravated by the warm weather.

EXPERIMENTAL WORK

Tobacco station, Mouna.—The following experiments were planned during the year, but unforeseen circumstances arose which prohibited the carrying out of the full programme.

1. Nitrogen Experiments,
2. Potash Experiments,
3. Variety Trials,
4. Turkisk Tobacco Experiments,
5. Burley Trials.

Seedbeds were sown on the 19th February but the torrential rains which occurred during the cyclone of March 5th washed these away completely. A second sowing was made on March 19th and germination was exceptionally good, but on April 20th "damping off" due to Phytophthora sp. appeared on all beds and spread with great rapidity. Treatment with Cheshunt Compound curtailed the disease to a great extent, but a further sowing was necessary which was done on new land. The disease also broke out on these new beds, and as no further seed was available it was impossible to carry out the full programme. Again the field which was to have been utilised for the Potash experiments was so badly washed by the flood waters as to render planting impossible. In consequence only the Variety trials, and the trials with Turkish and Burley tobacco were conducted and these on a considerably reduced scale.

Plants were put out in the field during May but Black Shank disease immediately made its appearance and caused such extensive losses as to render any yield results valueless.

The Burley varieties were also attacked heavily but from observations on the plants which survived it is probable that this tobacco suits local conditions and should under normal circumstances give good quality leaf and good yields.

Further details regarding Black Shank disease are given under Diseases below.

During January, 12 arpents of Crown Land at La Ferme were handed over to the Department of Agriculture, for the laying out of a Tobacco Station. Work was commenced in clearing and laying out the land, and buildings were erected. The land has been divided into three fields on which a three crop rotation will be followed. Irrigation canals are being constructed so that tobacco can be grown under irrigation.

Fields Nos. 1 and 2 have been put under green manure (Pois mascate) and Field 3 planted in tobacco.

The following experimental programme has been drawn up and will be run continuously over a series of years.

1. Fertiliser experiments.

A. Nitrogen series.
B. Phosphate series.
C. Potash series.

These experiments are being conducted on plots of 1/40 acre, there being five treatments in each series, and as many replicates of each series as is possible. It is anticipated that these treatments will be conducted continuously on the same plots with the same rotation treatment for at least five crops of tobacco.

2. Variety Trials.—These trials are being conducted on the row system with as many replicates of all varieties as is possible, on the land available. These trials will be carried out with a standard fertilizer treatment. Seven varieties of Virginian tobacco are being tested in 1932 and these will be increased later.

3. Burley Trials.—Trials with two varieties of White Burley will be conducted in 1932, lack of seed prevented this being done this year.

4. Seed Selection.—A large number of plots will be planted each crop for seed selection work with a view to improving the types and keeping them pure. These will be grown with the standard fertilizer treatment.

A beginning was made on the above programmes during December, and by the end of the year all the plots of Field 3 were planted. A new system of keeping records has also been instituted.

The land at Mouna loaned to the Department by Mr. Hugnin is now being returned to him and all efforts concentrated on the new station at La Ferme. Mr. Hugnin rendered great service to the Tobacco Industry by the loan of his land to the Department of Agriculture for the carrying out of experiments.

Barkly Experiment Station.—Variety Trials were conducted at this station during the year, but conditions were not conducive to good results, the weather being very dry and warm during the growing period, whilst rains occurred when the leaf was ripening, resulting in secondary growth, in consequence of which only low grade leaf was produced. Ten varieties were tested, of which seven were from imported seed, the other three being from seed obtained locally. The yields are set forth in the table below and were calculated on a 100 percent stand. The plants were planted in alternate rows $3' \times 3'$ and received a standard fertilizer treatment consisting of 200 lbs. Sulphate of Ammonia, 100 lbs. Guano, 200 lbs. Sulphate of Potash per acre.

Amarello (St.)	...	444.5	Kilos Dried Leaf per acre.
Yellow Pryor (St.)	...	238.5	do. do. do.
Adcock (St.)	...	93.1	do. do. do.
Amarello (Imp.)	...	363.8	do. do. do.
Yellow Pryor (Imp.)	...	197.2	do. do. do.
Hester (Imp.)	...	194.9	do. do. do.
Warne (Imp.)	...	195.7	do. do. do.
Gold Leaf (Imp.)	...	164.2	do. do. do.
Big Orinoco (Imp.)	...	170.8	do. do. do.
Adcock (Imp.)	...	463.6	do. do. do.

(St.) : Local seed.—(Imp.) : imported seed.

With the exception of the variety Adcock (Imp.) all the varieties from imported seed show a lower yield than the varieties from local seed. The quality of leaf obtained was extremely poor, with the exception of Amarello and Yellow Pryor. In view of the extremely dry conditions and the shortage of irrigation water during the early growing season little reliance can be placed in the results.

All tobacco work has how been discontinued at this station and efforts will be concentrated on the new Tobacco Station at La Ferme.

ITINERARY WORK

Field inspection and advisory work was carried on throughout the year as before, officers of the Division paying almost 4,000 visits which entailed travelling to the extent of over 16,000 miles.

Proclamation No. 51 of 1927.—One notice was issued for the destruction of mosaic diseased plants under this proclamation as against seventeen the previous year. There were no prosecutions for the non-compliance with the notice.

Nine complaints were lodged under this proclamation against growers for the cultivation of ratoons.

Proclamation No. 11 of 1931, as amended by Proclamation No. 15 of 1931.—Twenty nine permits were issued under this Proclamation for the removal of plants and seed. There were no prosecutions.

Ordinance No. 6 of 1928.—Certificates of registration numbering 1,461 were issued under the provisions of this Ordinance during the year, for an acreage of 1,783 acres as against 3,036 acres in 1930 and 2,745 acres in 1929. There was one complaint lodged for the non-registration of a plantation.

DISEASES

Black Shank (*Phytophthora parasitica*).—The disease appeared in epidemic form on certain plantations after the heavy rains which accompanied the March cyclone, and was reported from estates where it had not previously been discovered. In order to prevent the spread of the disease a Proclamation was issued in April, which prohibited the transfer of any tobacco seed, or young plants from one plantation to another unless the owner thereof had been granted a certificate showing that such seed or plants were not likely to be infected with Black Shank disease. This undoubtedly prevented the disease from becoming more widespread. Twenty four cases were reported during the year, of which sixteen were reported during the months of April and May when conditions were extremely favourable for its spread, the weather being warm and moist. It would certainly appear that climatic conditions govern the incidence of this disease to a very marked extent, the disease disappearing during the cool weather and reappearing with the summer rains. During the warm weather, prior to the summer rains, very little damage is done by the disease.

In case of seedbeds, the application of Cheshunt Compound was found, on several estates to keep the disease in check, and on some estates it is now becoming the practice to use this Compound as a routine precaution. This combined with crop rotation should prove effective in counteracting the disease.

Mosaic (*Virus*).—Seventeen cases of mosaic disease were reported as against fifty eight in the previous year. In 1926, mosaic was widespread throughout the Island, but since the proclaiming of Proclamation No. 51 of 1927, the disease has gradually been controlled. This Proclamation prohibits the cultivation of ratoon tobacco and compels the owner to destroy any mosaic-diseased plant. These measures have been entirely successful, and to-day a mosaic diseased plant is an exception.

Granville Wilt (*Bacterium Solanacearum*).—This disease is still encountered but not to any great extent, six cases were reported during the year, being the same number as in the previous year. In the case of this disease also, climatic conditions would appear to play a great part, as very rarely are cases reported during the cool months of the year. It is not however of very great importance and does not cause much damage.

"*Damping Off*" *Rhizoctonia and Pythium sp.*—Four cases were reported during the year on seed beds, and in all cases it was aggravated by too much watering. The curtailment of watering prevented the spread of the disease and no great damage was sustained.

GOVERNMENT TOBACCO GRADING WAREHOUSE

This warehouse was closed during the year and is to be replaced later by the Government Tobacco Warehouse under the direction of a Tobacco Board invested with powers to control the area planted and to fix prices for the buying and selling of leaf which is entirely in the hands of the Board.

MISCELLANEOUS

The Government Tobacco Officer served as a member and Secretary of the Informal Tobacco Committee. This committee was appointed by His Excellency the Governor under the chairmanship of the Director of Agriculture to advise on measures to be adopted for the establishment of the Government Tobacco Warehouse. The preliminary work towards the establishment of the Warehouse has been carried out by this Division and on the opening of the Warehouse certain members of the present staff will be transferred and will carry out their duties under the control of the Government Tobacco Board.

Owing to the damage sustained by the cyclone only a limited supply of seed was available for sale during the year.

GEOFFREY CORBETT,
Government Tobacco Officer.

IX

AGRICULTURAL AND EXPERIMENT STATION DIVISION

Central Experiment Station.—The variety plots of seedling canes selected by this Division prior to 1928, together with several imported varieties were reaped in September. Tops of the best varieties were sold to planters for propagation. The Java seedling P.O.J. 2878 was released from quarantine and cuttings distributed. Several hundred cuttings of this variety were also planted on beds, to be transplanted in the field during the rainy season.

Spacing and time of planting experiments were made with local rice, unfortunately the trials suffered severely from cyclone damage, hares and deer. Approximately 1,125 kilos of paddy were reaped and will be available for distribution.

A Fibre experiment was laid down in August with the object of testing the two local "Fourcroya" varieties and "Aloes Bleue" (Agave americana) against Sisal. This experiment was divided into twelve plots, three plots of each variety, each plot containing 160 plants. All the young plants are established and growing well. On the same land as the above experiment, a small plantation of 70 Tung oil plants (Aleurites Fordii) was established at 25' x 25'.

1,558 suckers of Smooth Cayenne pineapples were planted in double rows in Field 11 with the object of carrying out a manurial experiment with this crop next year.

Several varieties of ground nuts were sown in January, the crop being harvested in July giving an average yield of 306 Kilos per acre.

Two acres were planted with Pigeon peas of local varieties and several new types from U.S.A. and Nigeria. Many plants were killed by the hurricane aud a second sowing had to be made. The plantation looked promising towards the end of the year but was badly attacked by insect pests earlier in the season (see Entomological report).

Plantations of various foodcrops such as Manioc, Sweet Potatoes, Maize, Eddoes, Tannias, etc. were made in order to supply planting material when required to small-holders.

An experimental plantation of seven species of coffee was established in Field 15, in order to study this crop which is not generally grown locally. Pigeon peas were grown between the rows to provide light shade.

A plot of land, one acre in extent, is being prepared near the labourers camp to establish a small plantation of cloves and pepper.

Barkly Experiment Station.—Much damage was done to different crops, the plant shed and the orchard by the cyclone. Many letchis, peaches and other fruit trees were killed by the hurricane.

The following interesting acquisitions were made during the year :—

2	Figs " Adai "	from Egypt.
6	Pecan nuts (grafted)	from South Africa.
8	Grape vines ,,	,,
15	Peaches ,,	,,
4	Nectarines ,,	,,
2	Japanese plums ,,	,,
2	Almonds ,,	,,
1	Apricot ,,	,,
1	Letchi layer	China
1	Pomegranate ,,	,,
1	Pear ,,	,,
3	Jujube seedlings	Abercrombie Nursery.

7,500 " Mosakande " tea plants raised from seeds received from Ceylon, were raised in grass pots, and are now ready for sale.

The sale of plants during the year amounted to Rs. 1,209.79, being as follows:—

5,817	Coffee seedlings
3,522	Pineapple suckers
328	Clove seedlings
161	Letchi layers
143	Citrus grafts & seedlings
15	Apple layers
114	Mango grafts

The Pemba Dwarf Coconuts received from Zanzibar have germinated well. It is intended to plant an acre of this variety at Cannoniers Point, and to sell the remainder to the public.

The pepper vines planted from cuttings last year are growing well, and many of the plants are now flowering.

A plant shed transferred from Curepipe Gardens was erected near the Nursery ; this shed being partly glass-roofed will be useful for raising seedlings etc.

Plantations of different varieties of Manioc, Sweet Potatoes, Yams, Eddoes, Tannias, Pigeon peas, Soy beans, Maize etc. were made ; cuttings, tubers and seeds of the above are distributed free to the public, an offer that is not availed of to any extent.

Royal Botanical Gardens Pamplemousses.—Great damage was done by the cyclone, many interesting trees being either uprooted or broken. The bridges in the Ravine were carried away by the flood, two kiosques were blown down and others badly damaged. The work of clearing away the wreckage took over a month.

Several collections of Ferns, Begonias, Amaryllis, Caladiums, Gloxinias and other ornamental plants were received from Curepipe Gardens; they have been planted in the greenhouse.

Nine new beds were made in the Victory Square; they were planted with a choice collection of roses. Two kiosks were rebuilt and the others repaired. The bridges, canals, lakes, lawns, paths and roads were attended to throughout the year. The quarters of the 1st Assistant Overseer, were repaired and painted by the Public Works Department.

Second Assistant Overseer, A. Villars, was transferred to Barkly Experiment Station and replaced by B. Emmanuel.

Curepipe Gardens.—These gardens were maintained in good condition up to the end of November, when it was decided to close them on account of the financial situation. This was avoided in part by the Société Horticole taking over the rosery and flower section. It was decided to abandon the rest of the gardens for the present. The Overseer was transferred to Barkly Experiment Station.

Abercrombie Nursery.—The plants sold were as follows :—

230	Palm seedlings
124	Letchi layers
125	Mango grafts
261	Citrus grafts and seedlings
2,131	Miscellaneous plants

The revenue amounted to Rs. 1,028, and the expenditure to Rs. 660.

Many plants were also distributed free to Government Institutions.

Stock Farm.—The health of animals was generally good. At frequent intervals animals were received from Curepipe Dairy and after a stay of a short period on grass were returned to the Dairy.

Food Settlements, St. Martin, St. Thomas and La Ferme.—These Crown lands comprising 83 acres in the Black River district were leased to shareholders of St. Martin-La Ferme Co-Operative Credit Society as allotments. Crops of Maize, Manioc, Sweet Potatoes, and vegetable were grown by the lessees who pay a rent of R. 1.00 per acre for the land.

School Gardens.—Six new School Gardens were registered during the year at :—

Belle Rose Roman Catholic Aided School.
L'Escalier Government School.
Mare d'Albert Government School.
Chemin Grenier Roman Catholic Aided School.
Baie du Cap Roman Catholic Aided School.
Grand River South East Government School.

There are now 32 registered School Gardens. Planting and fencing material, manure etc. are supplied free by the Schools Department. Inspections are regularly made by Officers of the Agricultural Division.

Prizes were awarded as follows for the best kept gardens :—

1st Prize of Rs. 45 to Old Grand Port R. C. Aided School.
2nd Prize of Rs. 35 to Christian Brothers R. C. Aided School, Rose Hill.
3rd Prize of Rs. 30 to Plaine des Papayes Government School.
4th Prize of Rs. 25 to L'Escalier Government School.
5th Prize of Rs. 20 to Souillac Government School.
6th Prize of Rs. 15 to Rose Belle Government School.

Three prizes of Rs. 10 each were given to Bambous Government School, Brisée Verdière Church of England Aided School and Quatre Bornes Government School.

The following gardens also deserve special commendation :—

1. Poudre d'Or Government School
2. Crève Cœur ,,
3. Ruisseau Rose ,,
4. Rose Belle ,,
5. Beau Bassin ,,
6. Mahebourg ,,
7. Camp Diable ,,
8. Highlands Road C. of E. Aided School
9. Sébastopol ,, ,,

Experimental Plots "Mon Plaisir" and "Mon Rocher".—These plots were cultivated as in previous years but a larger proportion of the land had to be allocated to the Sugarcane Research Station for cane seedling work. The variety plots of canes (pre 1928 seedlings and introduced varieties) served as a useful source of supply for estates.

Areas of economic crops and green manures were grown for distribution.

The propagation of the Smooth Cayenne and Queen pineapples was continued, 4,900 suckers were sold to the public, 1,558 sent to the Central Experiment Station and 100 to Government House.

A consignment of Smooth Cayenne pineapples was sold to the Mauritius Pineapple Canning Company.

Grafts, layers, seedlings and seeds of fruit trees and palms were supplied to Barkly Experiment Station, Abercrombie Nursery, Forest Department, School Gardens and other Government Institutions.

C. A. O'CONNOR,
Senior Agricultural Officer.

PART III

MISCELLANEOUS

STAFF CHANGES

Mr. A. G. G. Hill continued to act as Director during the whole year.

Mr. E. F. S. Shepherd, Botanist and Mycologist, returned from his mission to Australia and Java on the 23rd April 1931.

Mr. R. Lincoln, Assistant Chemist, who was on leave in Europe resumed duty on the 22nd October 1931.

Mr. A. Moutia, Assistant Entomologist, proceeded to Europe on leave of absence on the 31st January 1931, Mr. J. Vinson, Scientific Assistant, replacing him. Mr. Moutia resumed duty on the 1st December 1931.

Mr. E. Grégoire, Chief Clerk, acted as Deputy Collector of Customs from the 20th November 1931 and was replaced by Mr. J. H. Nicolin of the Treasury Department.

Mr. W. Bourdet, Correspondence Clerk, was transferred to the Treasury on the 18th February, 1931 and was replaced by Mr. J. Laridon of that Department.

Mr. G. H. Urruty, Librarian, acted as Assistant Master, Royal College, from the 10th February 1931 and was replaced by Mr. A. de Robillard.

Mr. I. Félix, Clerk, proceeded to Europe on leave of absence on the 25th July 1931 and was replaced by Mr. H. Bénier.

Mr. D. J. Valadon, who was acting as Store Clerk, reverted to the Secretariat on the 24th August 1931 and was replaced by Mr. R. Chang-Kye.

Mr. P. Ribet relinquished his appointment as Officer in charge of Phytalus Destruction, Pamplemousses, on the 30th September 1931 and was replaced by Mr. J. Halais.

PUBLICATIONS

The following publications were issued during the year :

BULLETINS

(*a*) A Preliminary List of Plant Diseases occurring in Mauritius.
(*b*) Gardening Calendar for the Uplands of Mauritius.

REPORTS

(*a*) Annual Report of the Department of Agriculture for 1930.
(*b*) First Annual Report of the Sugarcane Research Station for the year 1930.
(*c*) Report on the working of Co-Operative Credit Societies for the year ended 30th June 1931.
(*d*) Report on the Operations for the Control of Phytalus Smithi during the season 1930–31.
(*e*) Final Compilation of Sugar Production for the 1930–31 Sugar Compaign.
(*f*) Preliminary Forecast of Sugar Production for the 1931–32 Sugar Campaign.
(*g*) Report on Java Cantala Fibre Industry.
(*h*) Report on visit of Mr. E. F. S. Shepherd, Botanist and Mycologist, to Australia and Java.
(*i*) Revised Forecast of Sugar Production for the 1931–32 Sugar Campaign.
(*j*) Preliminary Compilation of Sugar Production for the 1931–32 Sugar Campaign.

The following articles from Officers of this Department were published in the Revue Agricole :

"Les Galles des Tiges de la canne à sucre à Maurice" ...	by Mr. G. Orian, Plant Inspector.
"L'emploi du sucre de consommation directe dans la fabrication des gelées, marmelades et conserves de fruits."	by Mr. L. Baissac, Sugar Technologist.
"Maladies et apparences anormales observées sur la P. O. J. 2878 à Maurice."	by Mr. G. Orian, Plant Inspector.
"Résultats d'un essai comparatif de rendement sur une petite échelle avec la P. O. J. 2878." ...	by Mr. N. Craig, Bio-Chemist.
"Expériences avec du papier Pabco-Thermogen sur les ananas."	by Mr. C. A. O'Connor, Senior Agricultural Officer.
"Dwarf Coconuts for Mauritius"	by Mr. A. Glendon Hill, Ag. Director of Agriculture.
"Résultats des expériences de fumure avec engrais azotés."	by Mr. N. Craig, Bio-Chemist.

LEGISLATION

The following Ordinances, Proclamations and Notifications were issued during the year:—

Ordinance No. 36 of 1931—To provide for the protection of beneficial insects and to regulate their capture, removal, possession, sale and distribution.

Ordinance No. 46 of 1931—To amend the Tobacco Production and Marketing Ordinance, 1930.

Proclamation No. 7 of 1931—To declare a certain area infected with a plant disease.

Proclamation No. 11 of 1931—To declare that all lands planted with tobacco within the Island are infected with the "Black Shank disease."

Proclamation No. 15 of 1931—To amend Proclamation No. 11.

Government Notification No. 65 of 1931—Regulations made by the Governor in Executive Council under Ordinance No. 3 of 1881 and No. 5 of 1883 to provide for the proper shipment of cattle in Rodrigues.

Government Notification No. 102 of 1931—Regulation made by the Director of Agriculture under the Slaughtering of Cattle Restriction Ordinance, 1918 amending the Regulations published under Government Notification No. 242 of 31.10.25.

Government Notification No. 217 of 1931—Regulations made by the Governor in Executive Council under article 6 of the Registration of Agricultural Chemists Ordinance, 1917.

BOARD OF AGRICULTURE, MEMBERS OF:

The Board of Agriculture established under Ordinance 30 of 1912 consists of:—
His Excellency the Governor,—President. The Director of Agriculture,—Vice President.

The following members were appointed for 1931:—

Louis Espitalier-Noël, Esquire,
M. Martin, M.B.E., Esquire,
R. Gujadhur, Esquire,
Captain H. G. Hitchcock, M.B.E.,
Jules Leclézio, Esquire,
J. A. Duclos, K.C., C.M.G., Esquire,
G. Antelme, Esquire,
G. Clarenc, Esquire,
J. de Spéville, Esquire,
L. H. de Froberville, Esquire,
H. G. Ducray, Esquire,
Gabriel Régnard, Esquire,
Georges Mayer, Esquire,
Pundit Boleram, Esquire,
Pierre Montocchio, Esquire,
Pierre de Sornay, Esquire,
F. A. Nicholls, Esquire,
H. Lincoln, Esquire.

There was no meeting of the Board in 1931.

GENERAL

The Acting Director of Agriculture served as a nominated member of the Council of Government. He also acted as Chairman of the Agricultural College Board, the Phytalus Advisory Committee, the Exhibition Committee, the Stock Breeders Subsidising Fund Committee, the Registration of Agricultural Chemists Committee, the Tobacco Board, and also served on the following Boards and Committees:—the Board of the Mauritius Institute, the Forest Board, the Mauritius Hemp Producers' Syndicate (Executive Committee), the Stock Breeders Association, the Marine Resources Advisory Committee, the Finance Committee, and the Advisory Board of the Mauritius General Improvement and Development Fund.

EXPENDITURE

	Rs.	cs.
Department of Agriculture:—		
Personal Emoluments	138,872	25
Maintenance of Gardens	9,280	17
General Services	1,454	45
Prevention of Plant Pests and Diseases ...	1,712	48
Prevention of Animal Diseases	1,319	43
Upkeep of Stock	1,125	04
Travelling Expenses	6,505	77
Maintenance of Experiment Stations	11,995	32
Subvention to "Société Horticole"	500	00
Apparatus, Chemicals and Laboratory Supplies ...	2,865	39
Nursery for the distribution of economic plants ...	3,065	27
Destruction of Phytalus Smithi	95,688	35
Services rendered by the Railways	7,339	09
Contribution to "La Revue Agricole" ...	500	00
Telephones	559	24
Government Dairy	33,056	87
Minor Industries	25,486	09
Irrigation in the Northern Districts	495	00
Rice Cultivation	529	73
British Industries Fair	167	07
Sugarcane Research Station:—		
Extra Clerical Assistance and Contingencies ...	767	68
Equipment of Laboratory	3,086	72
Extension of cane breeding	9,728	58
Travelling Expenses and Services rendered by the Railways	1,473	44
Farm School:—		
Allowance to pupils	2,932	75
Subsistence allowance	244	00
Contingencies	715	05
Allowance to Cadets	1,504	60
Total ...	362,969	83

REVENUE

	Rs.	cs.
Sale of Plants	2,744	71
Sale of Sugar cane	7,671	53
Sale of Tobacco	1,089	84
Sale of Pineapple suckers	88	...
Sale of Soamin	55	...
Sale of B. C. G. Vaccine	729	35
Sale of Rice seed	156	22
Sale of Tobacco Seed	76	81
Sale of Produce from Government Dairy ...	27,323	60
Contribution from Co-operative Credit Societies	1,190	...
Analytical Fees	300	75
Sale of Manioc	325	...
Sale of Pois Mascate	143	20
Sale of Pistachio seed	15	36
Registration fees on Tobacco Plantations ...	758	...
Miscellaneous	7,956	37
Total ...	50,623	74

APPENDIX I

RESULTS OF METEOROLOGICAL OBSERVATIONS AT THE STATIONS UNDER THE CONTROL OF THE DEPARTMENT OF AGRICULTURE

Stations	Central Station—Réduit								Curepipe					Beau Bassin					Abercrombie		Pamplemousses	
Element / Months	Air Temperature			Relative humidity	Rainfall		Sunshine		Air Temperature		Relative humidity	Rainfall		Air Temperature		Relative humidity	Rainfall		Rainfall		Rainfall	
	Max.	Min.	Daily Mean		Depth of rain	No. of days of rain	Registered sunshine	% of possible sunshine	Max.	Min.		Depth of rain	No. of days of rain	Max.	Min.		Depth of rain	No. of days of rain	Depth of rain	No. of days of rain	Depth of rain	No. of days of rain
1931	°C	°C	°C	%	mm		hours	%	°C	°C	%	mm		°C	°C	%	mm		mm		mm	
January ...	27.8	22.3	24.4	76.3	450.6	25	...	...	24.1	20.5	88.7	844.2	29	29.7	21.7	84.2	290.0	11	264.9	18	336.0	21
February ...	27.7	21.7	24.3	77.1	528.4	22	...	...	24.4	20.1	87.8	654.0	25	29.7	21.7	77.0	545.4	10	528.5	19	569.5	18
March ...	27.6	21.6	24.1	72.5	1155*	17	...	...	23.4	19.9	86.4	152.5*	28	29.8	21.5	75.8	700*	5	635*	11	620*	11
April ...	26.2	20.9	23.3	79.1	148.3	24	...	...	22.6	18.8	88.0	383.0	28	28.6	20.7	77.1	41.4	5	187.9	14	206.8	16
May	23.8	18.2	20.8	78.0	83.8	16	...	..	21.2	16.8	87.1	350.2	26	26.5	19.0†	76.8	32.8	8	104.0	16	153.0	13
June	23.2	18.3	20.5	75.6	60.1	18	...	...	20.4	16.3	88.0	157.5	27	26.0	18.1	77.7	21.1	5	50.4	10	83.3	13
July	22.3	16.4	19.0	75.2	35.2	20	...	...	19.1	14.8	88.3	145.8	25	25.1	17.2	76.6	16.0	6	25.7	9	50.2	13
August ...	21.9	15.8	18.5	72.5	42.0	31	243.52	69.1	18.2	14.6	88.5	301.8	29	24.5	15.6	71.4	10.0	15	15.3	12	47.8	14
September ...	23.7	15.9	19.5	75.4	35.0	17	235.63	65.8	20.0	14.7	83.3	134.0	22	27.5	16.6	73.4	29.8	7	35.0	9	50.5	7
October ...	24.8	16.8	20.4	67.4	20.8	17	241.88	62.4	20.6	15.5	85.1	103.7	23	29.0†	17.6	72.6	11.5	10	13.4	11	16.5	8
November ...	26.1	19.1	22.2	67.9	160.5	17	201.27	51.6	21.2	17.1	85.0	375.5	24	30.5	18.8	75.1	75.6	16	128.1	14	132.5	17
December ...	28.1	19.9	23.7	65 7	46.0	19	272.18	66.1	23.9	18.4	79.9	157.8	18	30.5	19.9	77.3	78.2	10	13.3	9	58.3	8
Means ...	25.3	18.9	21.7	73.6	2765.7 Totals	243	...	...	21.6	17.3	86.3	5132.5 Totals	304	28.1	19.0	76.2	1851.8 Totals	108	2001.5	152	2324.4	159

* Mostly cyclone rains, estimated to ±10mm. † Interpolated.

Remarks:—The figures for Relative Humidity are the means of 9h. and 15h. readings. Temperature figures, at Réduit, are obtained from hourly measurements of thermograms standardised daily at 9h. and 15h. At other Stations, maximum and minimum thermometers are read daily at 9h. and 15h.

APPENDIX II.

CANE DISEASE SURVEY—1931

Examination of Canes at Mill Carriers

Districts	Number of Inspections	White Tanna					D. K. 74					M. 55					M. 131					D. 109					R. P. 8				
		% Canes					% Canes					% Canes					% Canes					% Canes					% Canes				
		Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot	Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot	Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot	Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot	Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot	Exuding Gum	Not Exuding Gum	With Stem Deterioration	Attacked by Borers	Affected with Red Rot
Pamplemousses ...	11	4	9	78	59	16	1	2	4	53	15	2	9	0	50	8	2	4	0	57	8	2	1	0	66	16	0	1	0	28	1
R. du Rempart ...	13	2	3	53	52	15	1	10	4	73	18	...	...	...	...	...	1	1	0	75	11	1	2	0	86	17	6	15	1	90	5
Flacq	19	7	7	67	26	8	2	1	3	33	15	4	1	5	25	5	3	1	1	26	4	...	..	...	...	...	...	...	...	...	...
Black River ...	3	4	0	16	17	1	0	0	8	43	2	...	...	...	...	...	6	1	6	51	4	...	...	...	...	...	1	3	3	34	8
Grand Port ...	22	4	11	44	25	9	1	1	0	2	8	5	4	0	50	9	4	6	0	25	6	...	...	...	...	...	1	3	2	40	3
Savanne ...	20	6	9	35	20	6	1	1	2	43	16	2	1	1	38	5	2	1	0	42	8	...	...	...	...	...	...	...	...	...	...
Moka ...	7	3	5	31	23	7	...	...	...	...	...	21	1	5	50	4	..	...	...	...	...	...	...	...	...	...	2	9	6	9	3
Plaines Wilhems ...	10	8	11	40	33	8	2	1	7	30	9	6	1	3	4	4	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Mean for the Island ...	...	5	9	46	28	8	1	1	4	39	14	6	2	3	38	5	3	3	1	38	7	1	1	0	77	17	2	6	3	39	6
Mean for 1930 ...	...	9	8	45	17	2	1	1	2	32	5	3	2	1	26	2	4	4	4	32	2	2	0	18	56	3	1	4	1	31	1

APPENDIX III.

Distribution of Cane Diseases in Mauritius in 1931 (Other than those listed in Appendix II)

Districts	Pineapple Disease	Smut	Root Disease	Streak	Pokkah-Boeng	Node Galls	Suspected Fourth Disease	Miscellaneous
Pamplemousses ...	None reported	One estate on P.O J. 213	Two estates varieties affected unknown	None reported	One estate on White Tanna	Pamplemousses Experiment Station on P.O.J. 2878.	One estate on M. 131 and M. 55	
Rivière du Rempart	None reported	Five estates on P. O. J. 213, M. 55, R. P. 8 and White Tanna	None reported	None reported	None reported	None reported	None reported	
Flacq ...	None reported	None reported	None reported	None reported	None reported	One estate on P.O.J. 213(?)	None reported	
Black River ...	None reported	One estate on 55/1182	None reported	One estate on R.P.8	None reported	None reported	None reported	
Grand Port ...	None reported	None reported	One estate on White Tanna	None reported	One estate varieties affected unknown	None reported	Three estates on D.K. 74, White Tanna and D. 109	One estate Helminthosporium, rather severe attack on WhiteTanna
Savanne ...	None reported	None reported	None reported	One estate on R.P. 8	None reported	Two estates on P.O.J. 2878	None reported	
Moka ...	None reported	None reported	None reported	None reported	None reported	One estate variety affected undetermined (Not P. O. J. 2878). Réduit Station on P. O.J. 2878	One estate on P.O.J. 2878	
Plaines Wilhems ..	None reported	None reported	None reported	None reported	None reported	One estate on P.O.J. 2878	Two estates on D.K.74 and White Tanna	